

2026刘义恒--图推命题思维笔记

共十节（八节必修+2节选修）

备注说明：该笔记是自己听完课结合老师的PPT进行整理的，例题来源于老师的ppt。



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2026刘义恒--图推命题思维笔记

了解出题形式

一组图：

					?
--	--	--	--	--	---

共同的特点，数量有关（恒定，等差，周期）

1	2	3	4	5	?
1	1	1	1	1	?
1	2	1	2	1	?

等差
恒定
周期

优先

两组图：

--	--	--

		?
--	--	---

共同的特点（左右可以分开看）
数量有关（恒定，等差，运算）

1	2	3	1	2	?
1	1	1	1	1	?
1	5	6	2	3	?

等差
恒定
运算（较少）

优先

九宫格

		?



来源于小红书@贝栗子

数量中的数字规律

<table><tr><td>1</td><td>2</td><td>3</td></tr><tr><td>1</td><td>2</td><td>3</td></tr><tr><td>1</td><td>2</td><td>?</td></tr></table> 等差	1	2	3	1	2	3	1	2	?	<table><tr><td>1</td><td>1</td><td>1</td></tr><tr><td>2</td><td>2</td><td>2</td></tr><tr><td>3</td><td>3</td><td>?</td></tr></table> 恒定	1	1	1	2	2	2	3	3	?	<table><tr><td>5</td><td>1</td><td>6</td></tr><tr><td>2</td><td>3</td><td>5</td></tr><tr><td>3</td><td>1</td><td>?</td></tr></table> 运算	5	1	6	2	3	5	3	1	?	<table><tr><td>3</td><td>1</td><td>4</td></tr><tr><td>5</td><td>2</td><td>1</td></tr><tr><td>2</td><td>2</td><td>?</td></tr></table> 运算2【难】	3	1	4	5	2	1	2	2	?
1	2	3																																					
1	2	3																																					
1	2	?																																					
1	1	1																																					
2	2	2																																					
3	3	?																																					
5	1	6																																					
2	3	5																																					
3	1	?																																					
3	1	4																																					
5	2	1																																					
2	2	?																																					

出题形式

<table><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td>?</td></tr></table> 出题者喜好：横向为主									?	<table><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td>?</td></tr></table> 出题者喜好：纵向难题									?	<table><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td>?</td></tr></table> 出题者喜好：较少出现									?
		?																											
		?																											
		?																											

出题者喜好

共同的特点（每排或每列可以分开看）
数量有关（恒定，等差，运算）

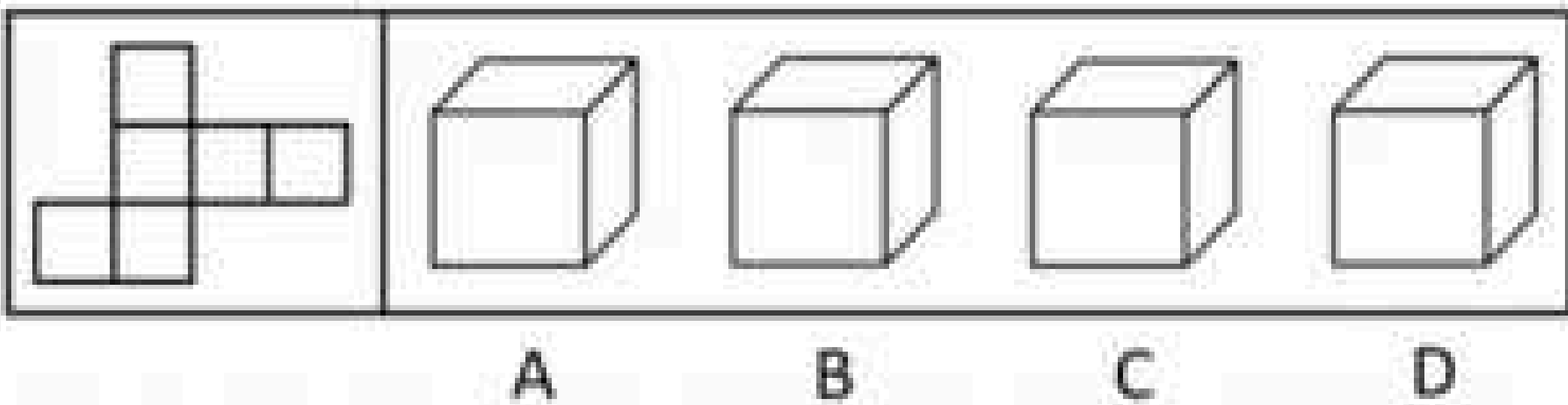
分组分类

①	②	③
④	⑤	⑥

出题者喜好

- ①两种规律（优先考虑）
- ②有规律和没规律（新趋势-属性规律出现多）

空间类

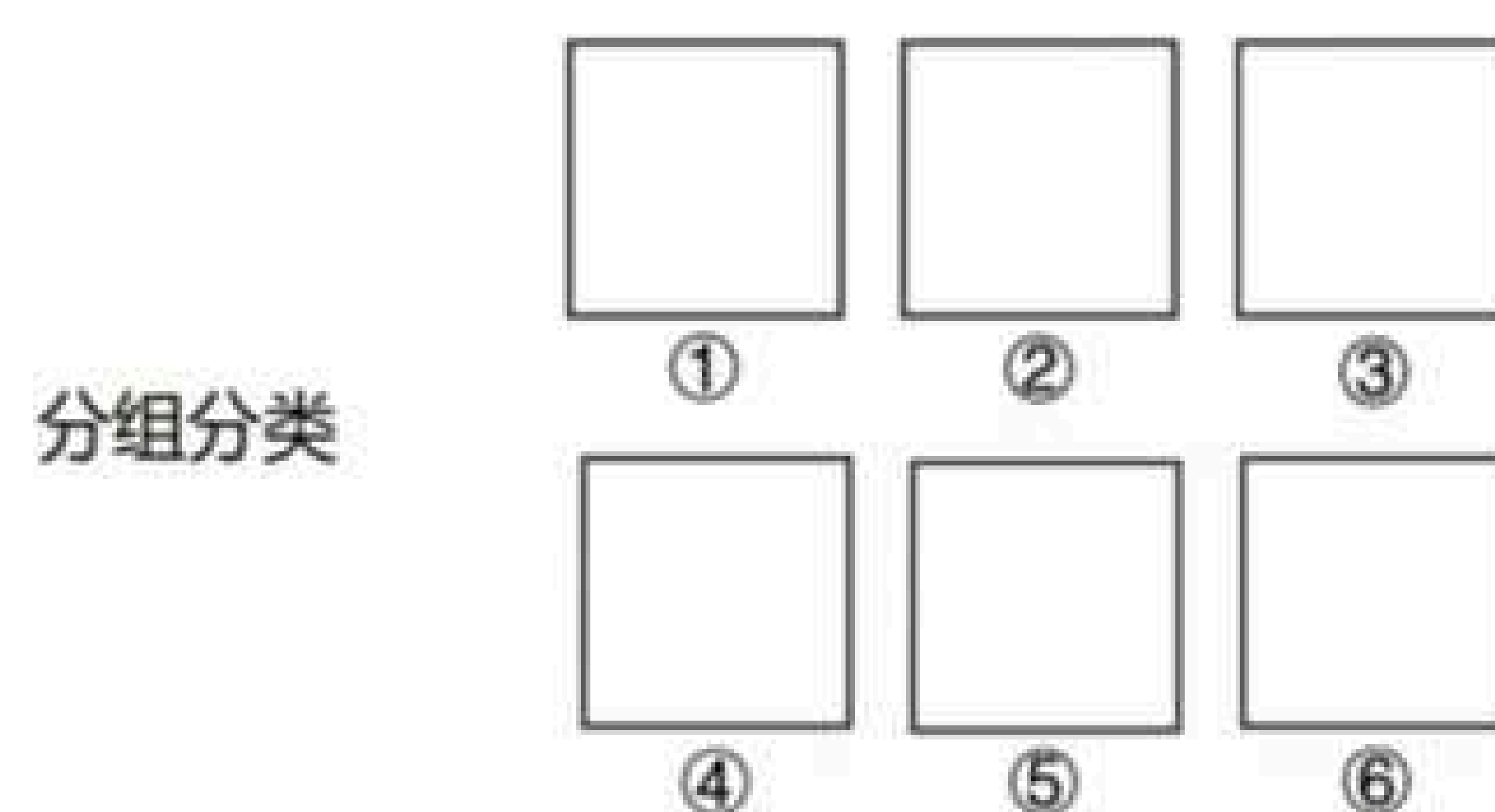
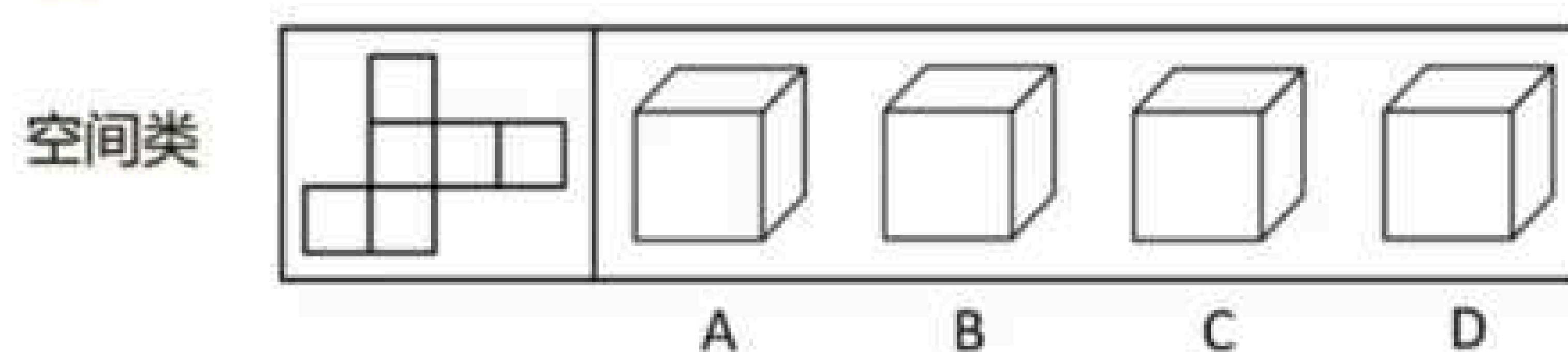
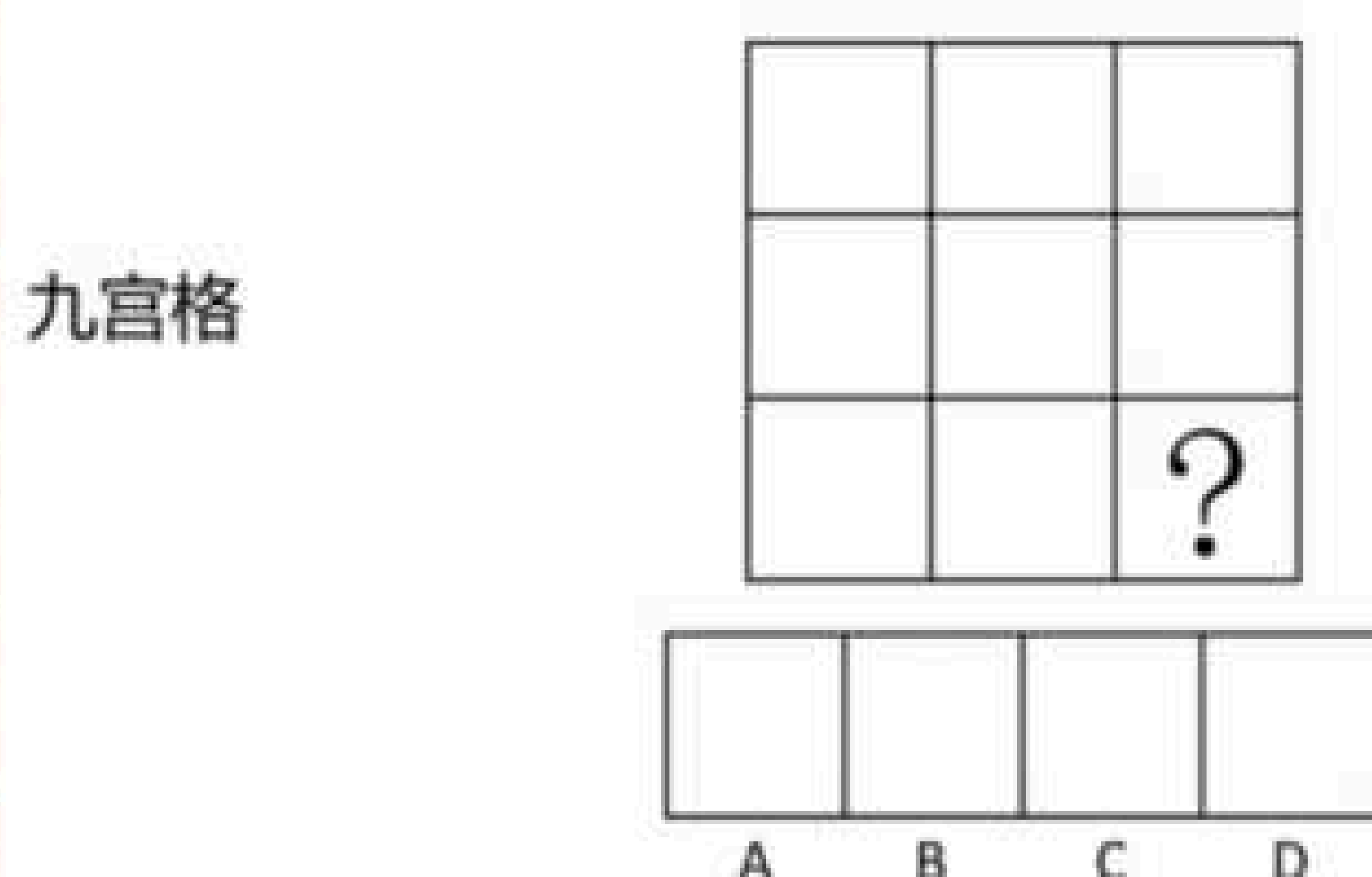
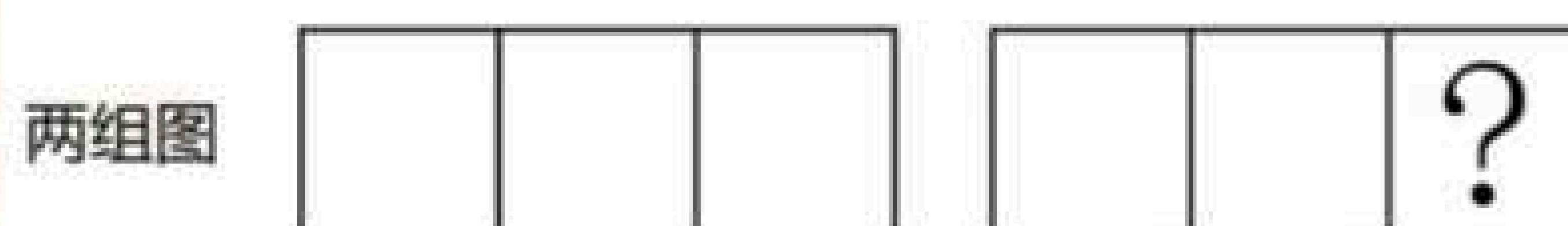
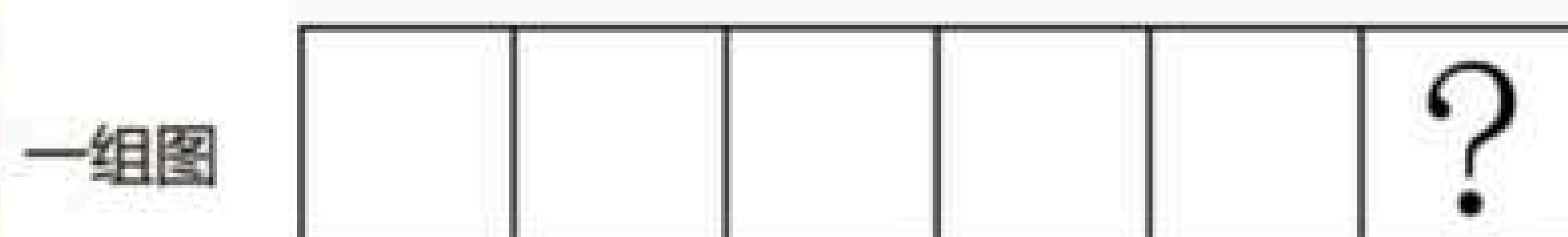
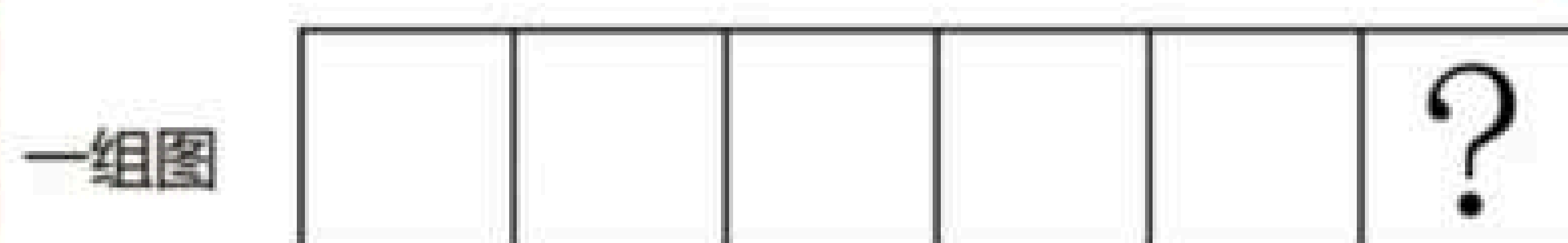


其他空间类：四面体，多面体，三视图，截面图，平面拼合，立体拼合等

小结

- ①平移、相邻比较不出“分组分类”
- ②样式以“两组图”“九宫格”为主
- ③九宫格喜欢“运算”

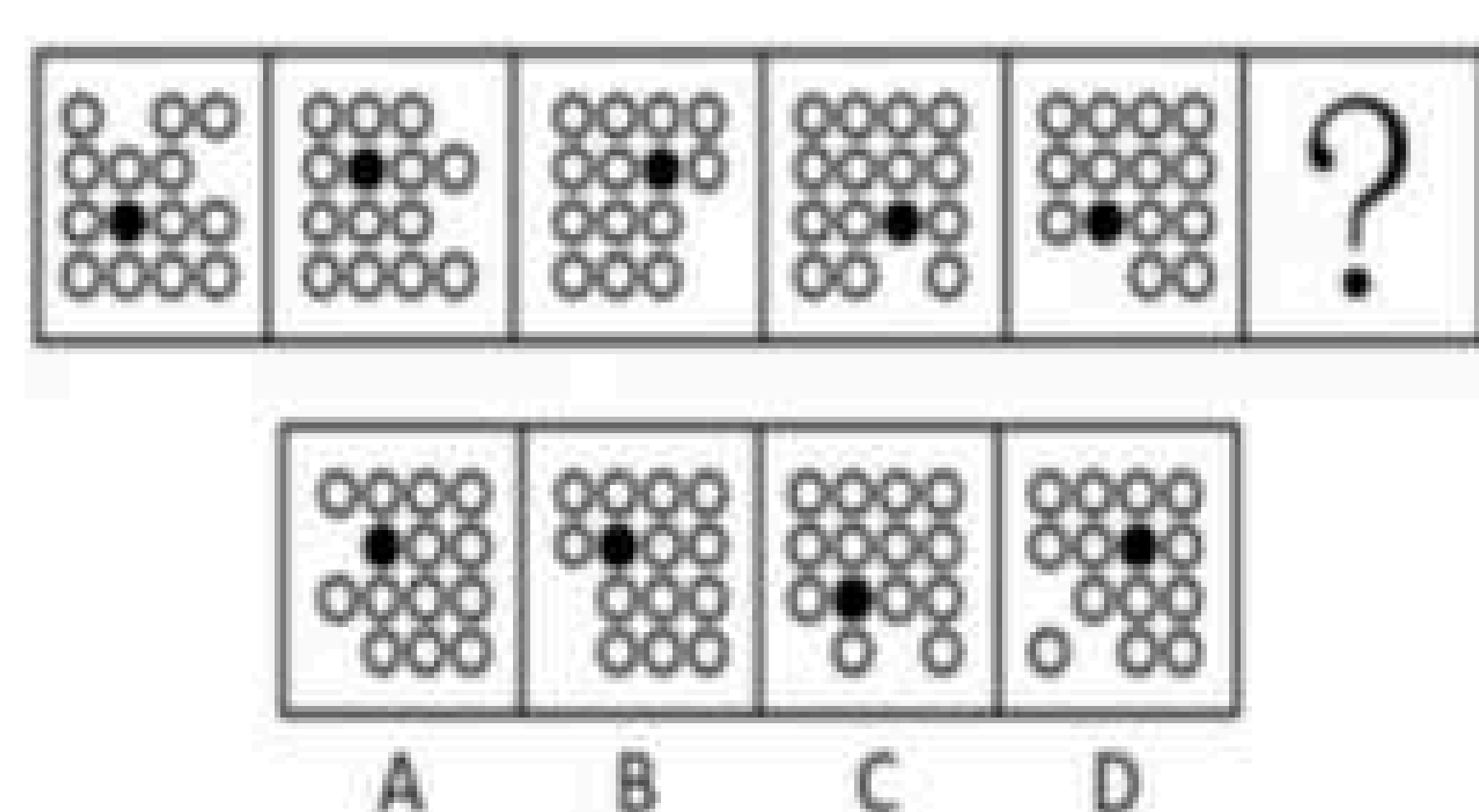
“出题形式” -- 小结



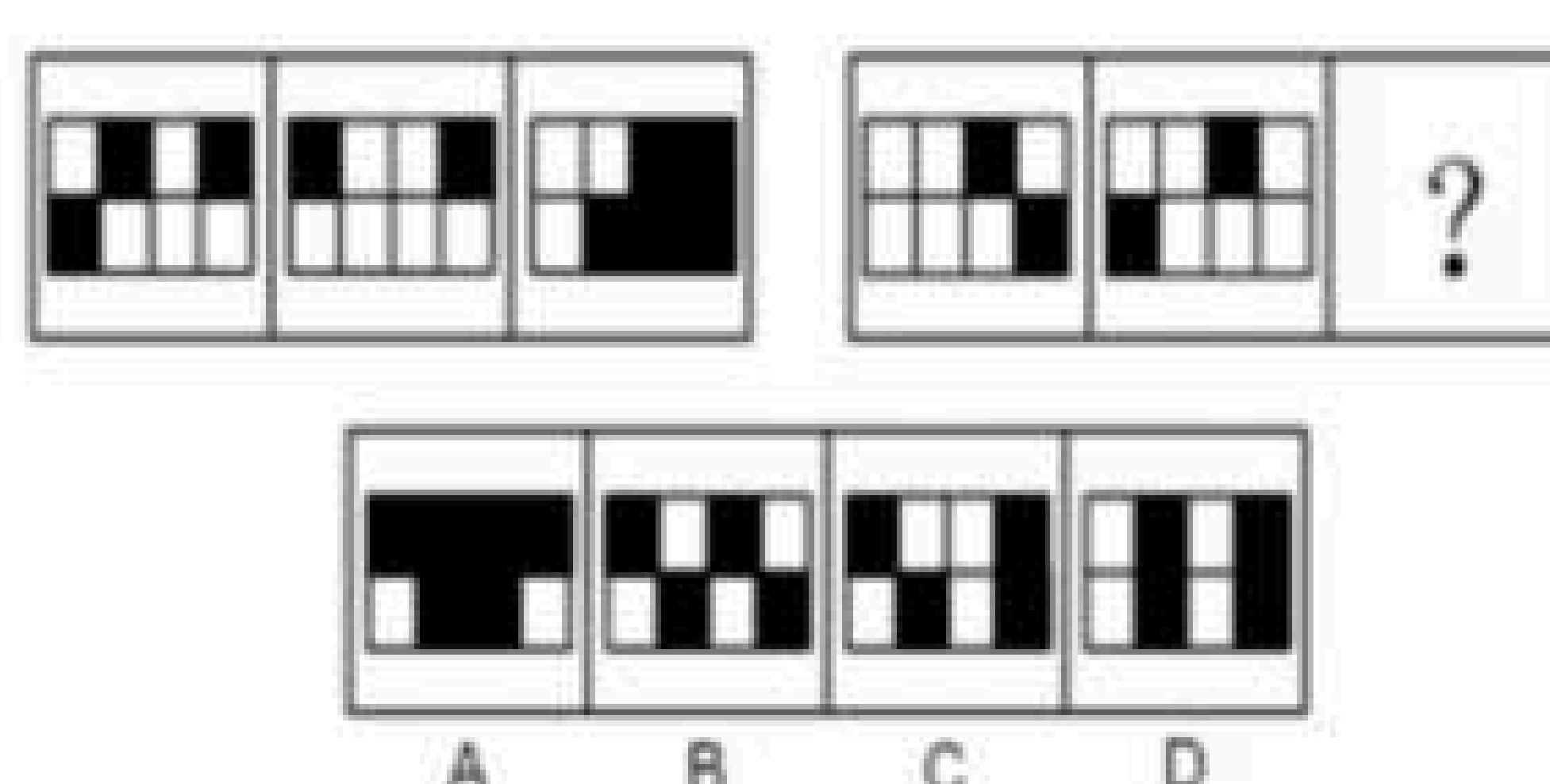
出题者喜好: ①平移、相邻比较不出“分组分类”
②样式以“两组图”“九宫格”为主
③九宫格喜欢“运算”

了解“作图特点” -- 决定大方向

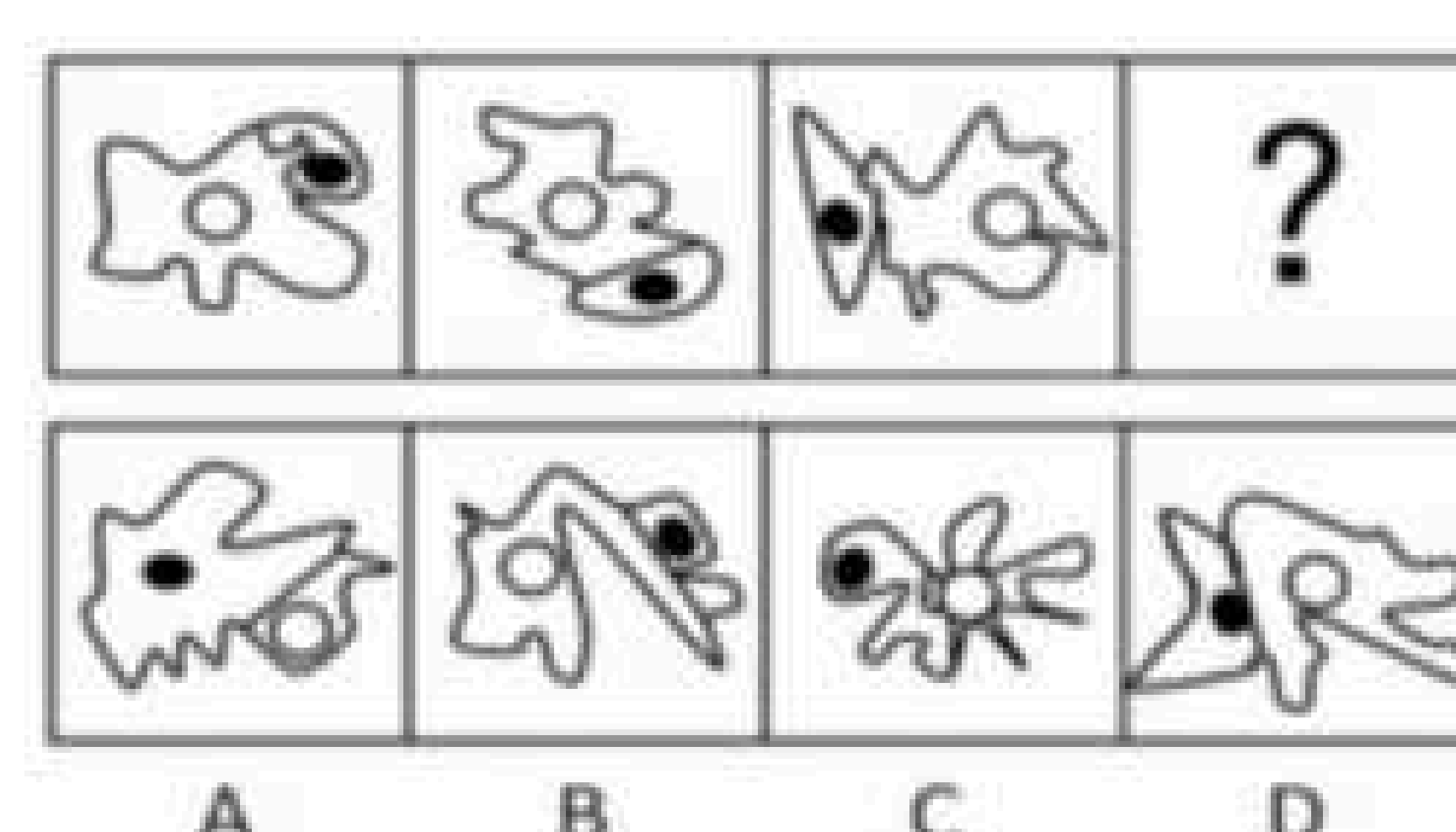
小红书: @贝栗子



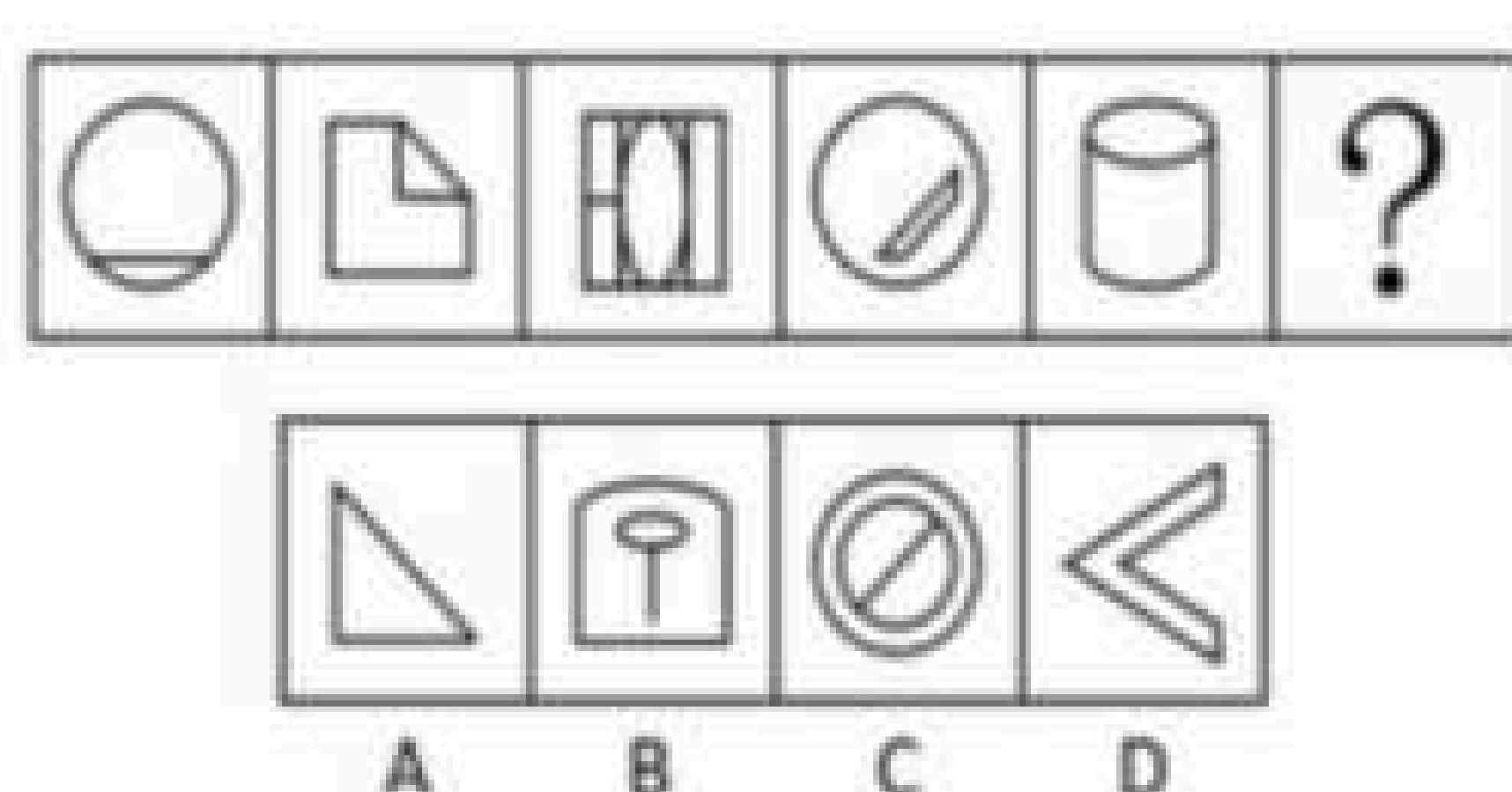
有相同 位置



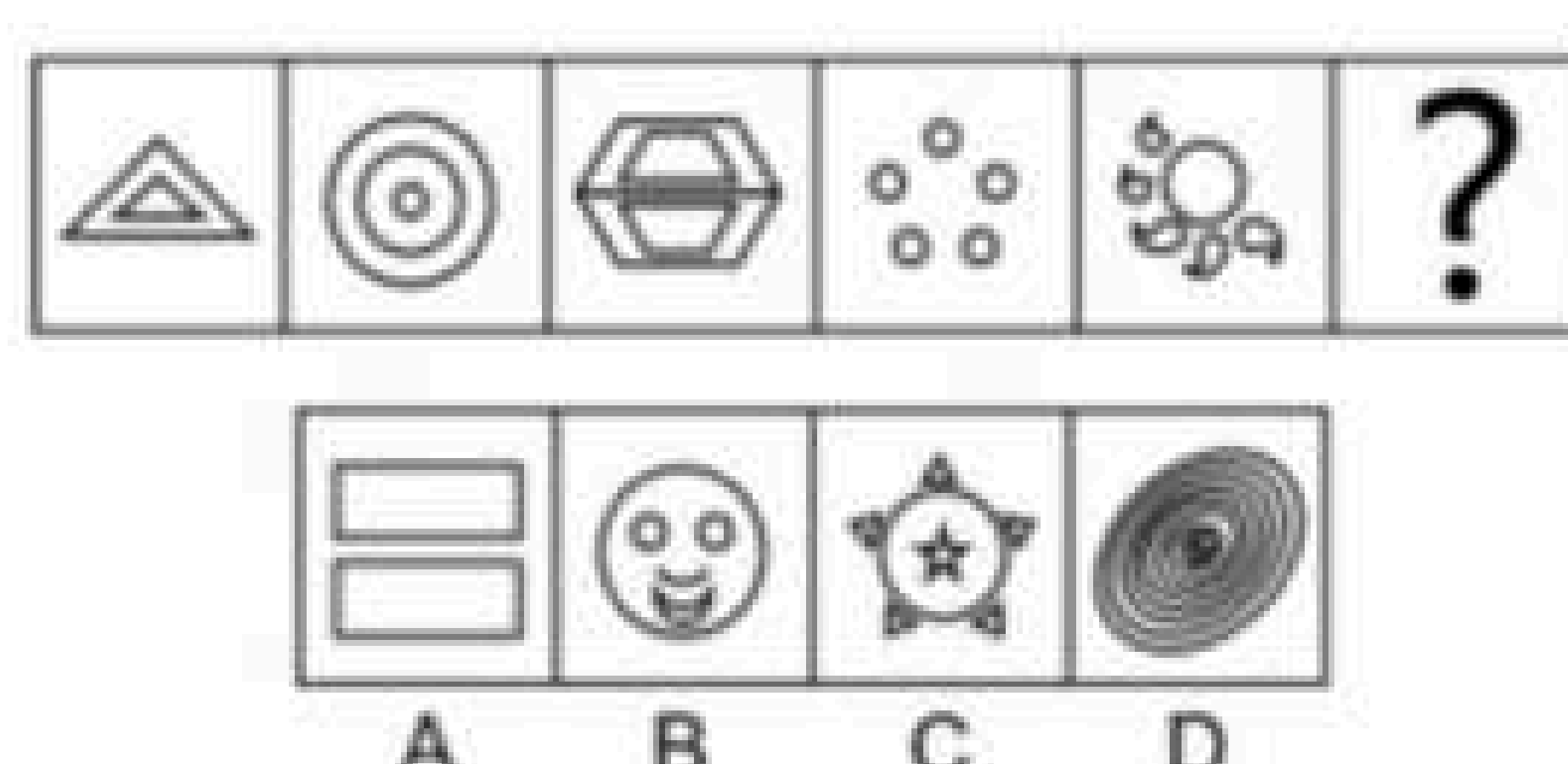
样式



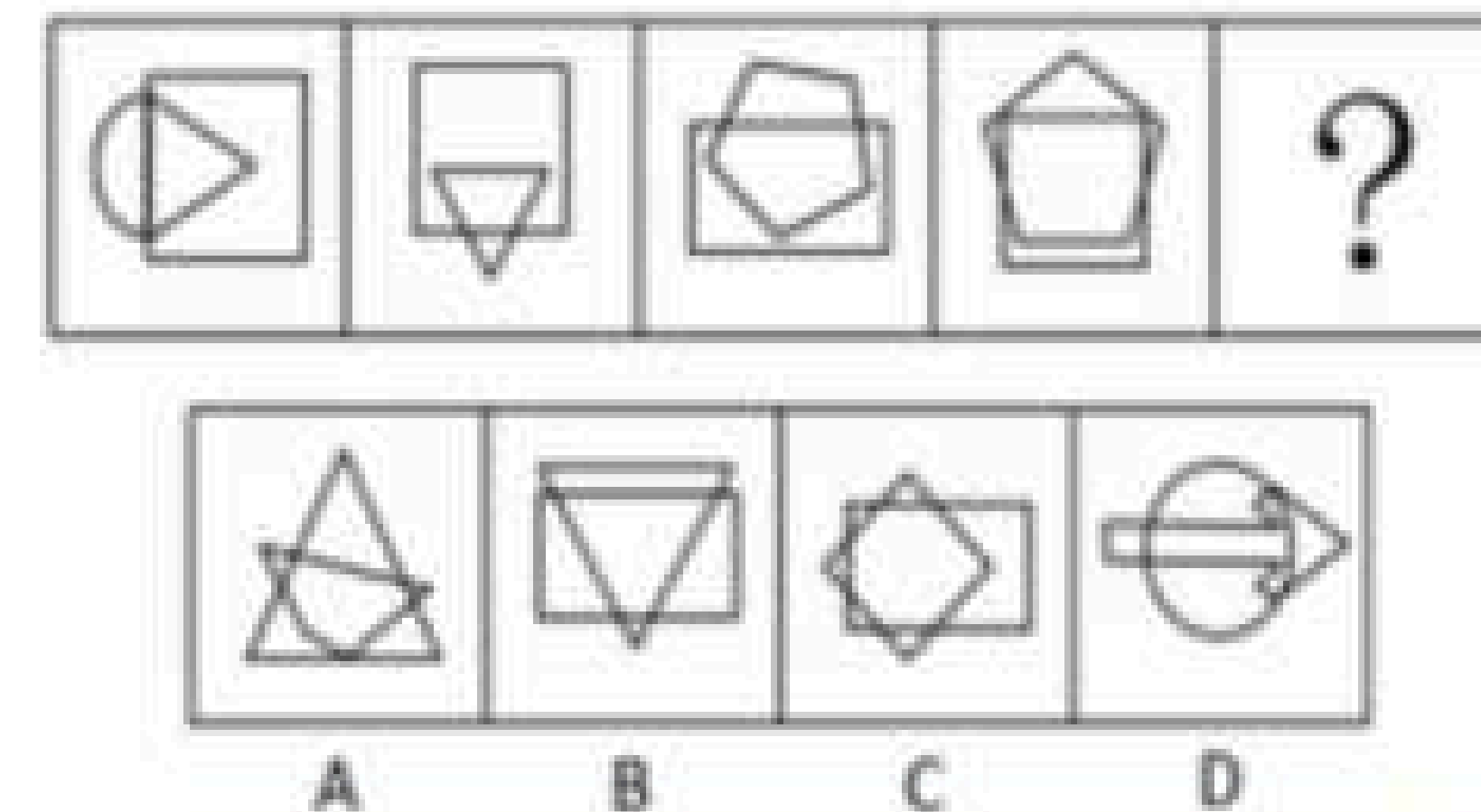
标记



无相同 属性



数量



图形间位置

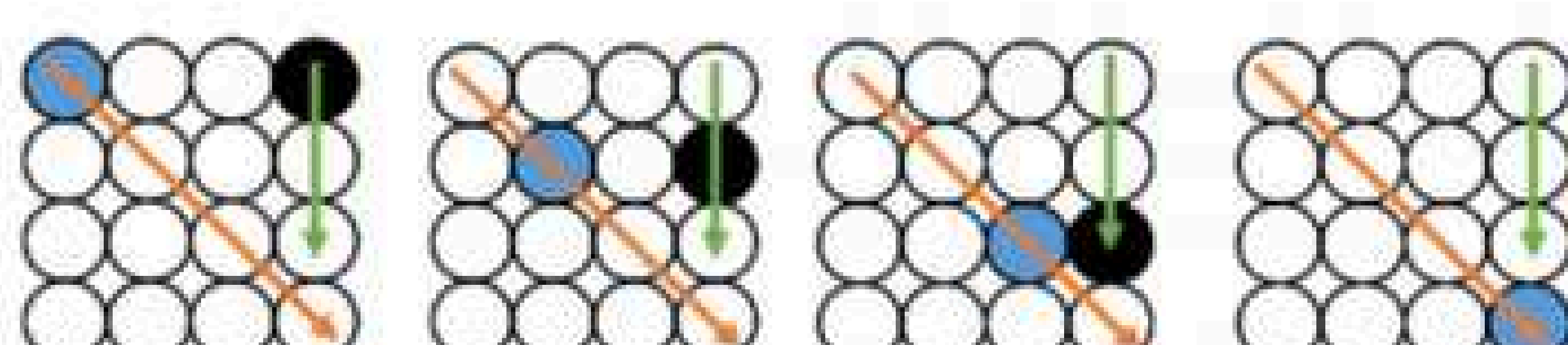
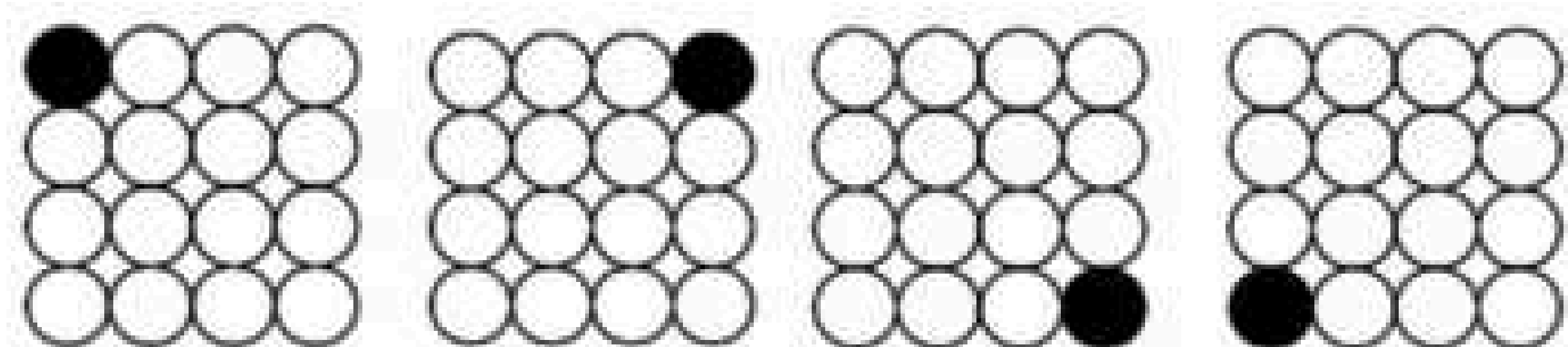




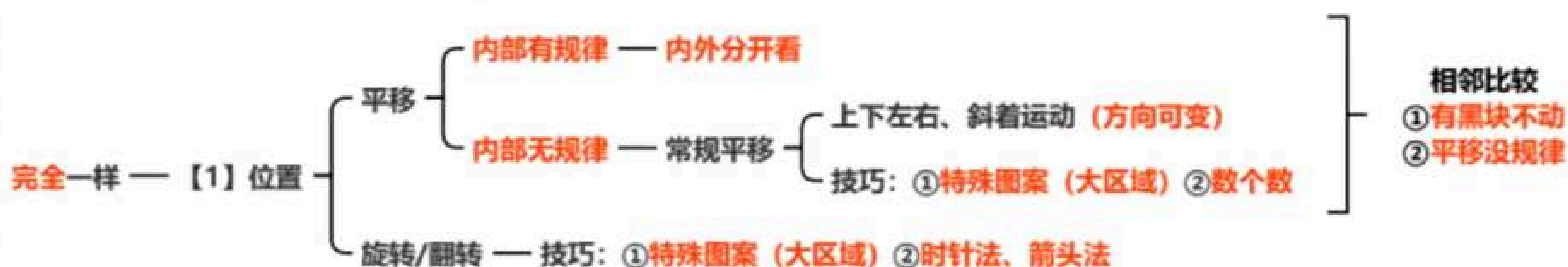
第一节：位置规律

◆ 命题者作图特点：每幅图图案相同

➤ 在重合情况下，图案数量会减少。

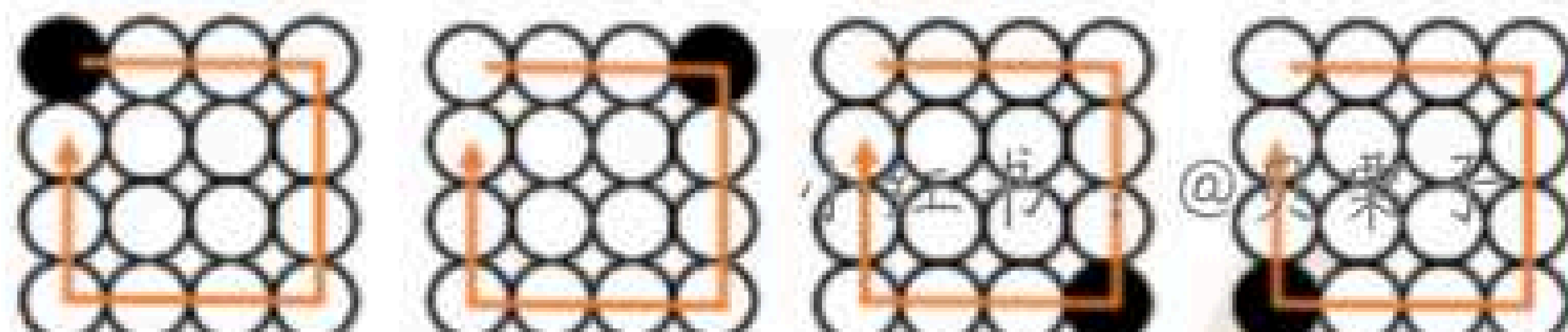
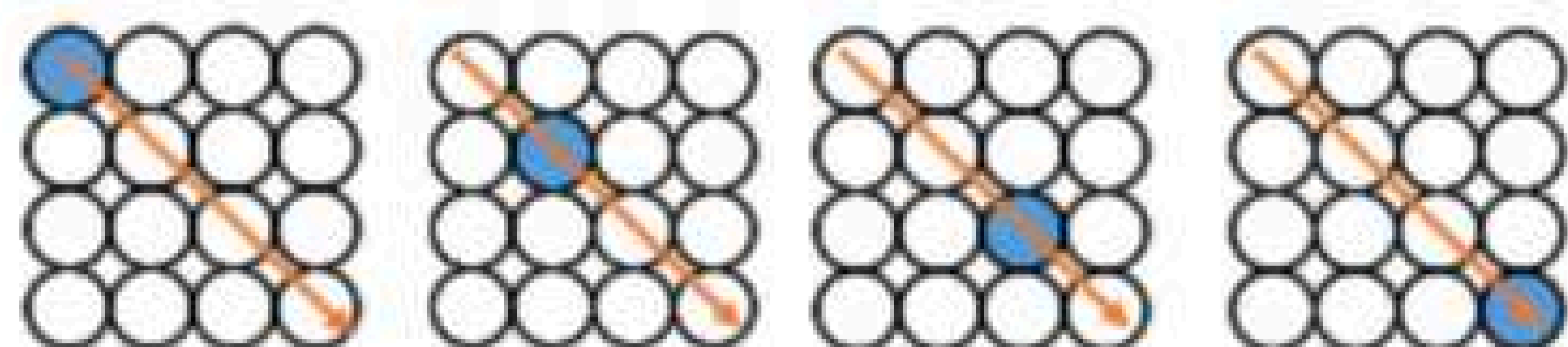


◆ 考点：①：平移 ②：旋转、翻转



考点1. 平移

方向



①直线(上下、左右、斜对角线)

②绕圈(顺 / 逆时针)

步数

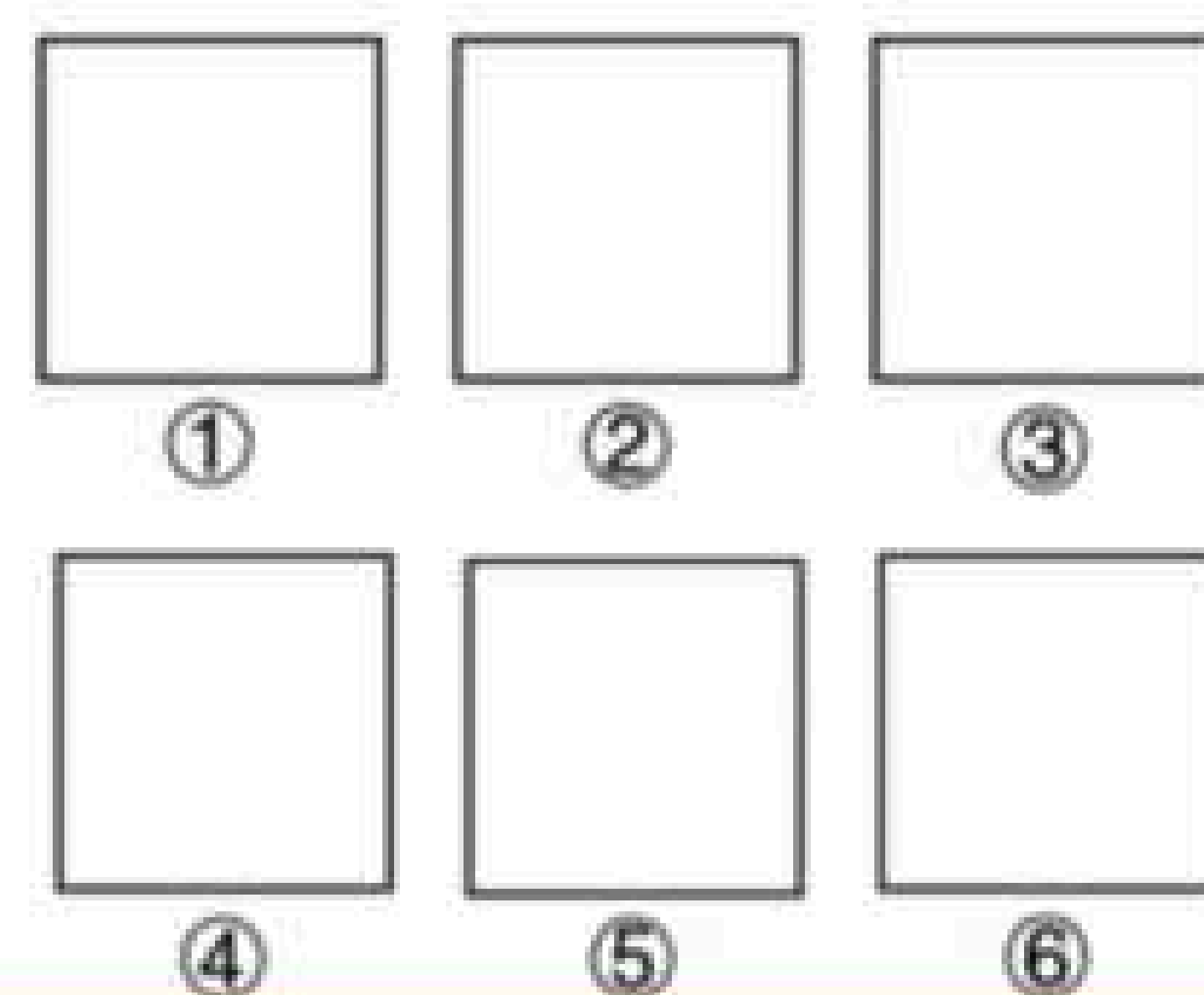
恒定(高频)、递增, 递减(较少)

---确定方向是难点!

出题形式

除了“分组分类”均可

分组分类



平移不考分组!

【答题思路】:

①确定“平移”后, 第一步先观察内部是否有规律

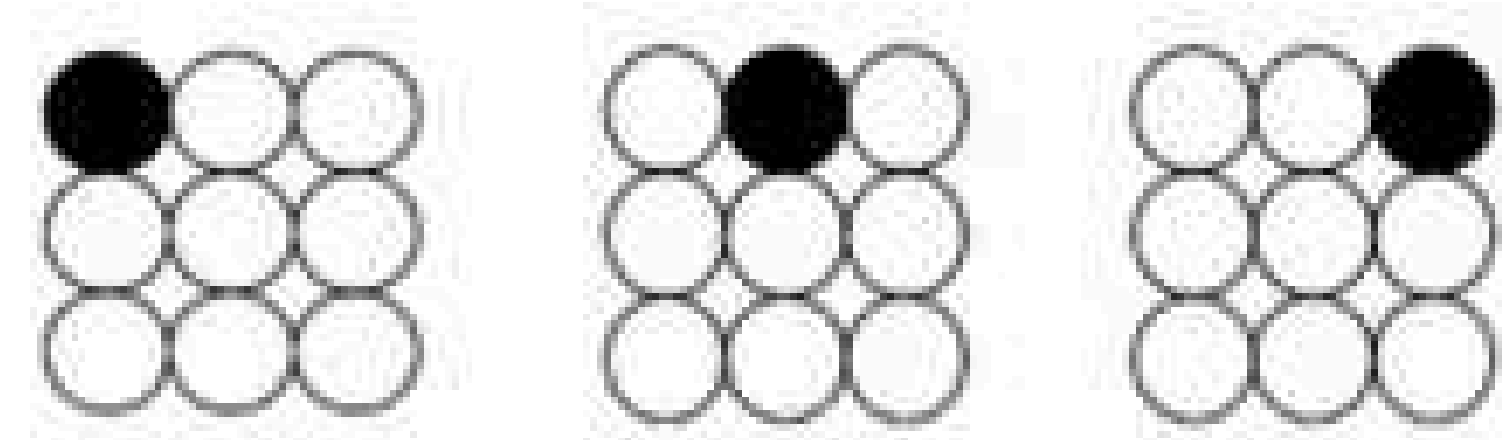
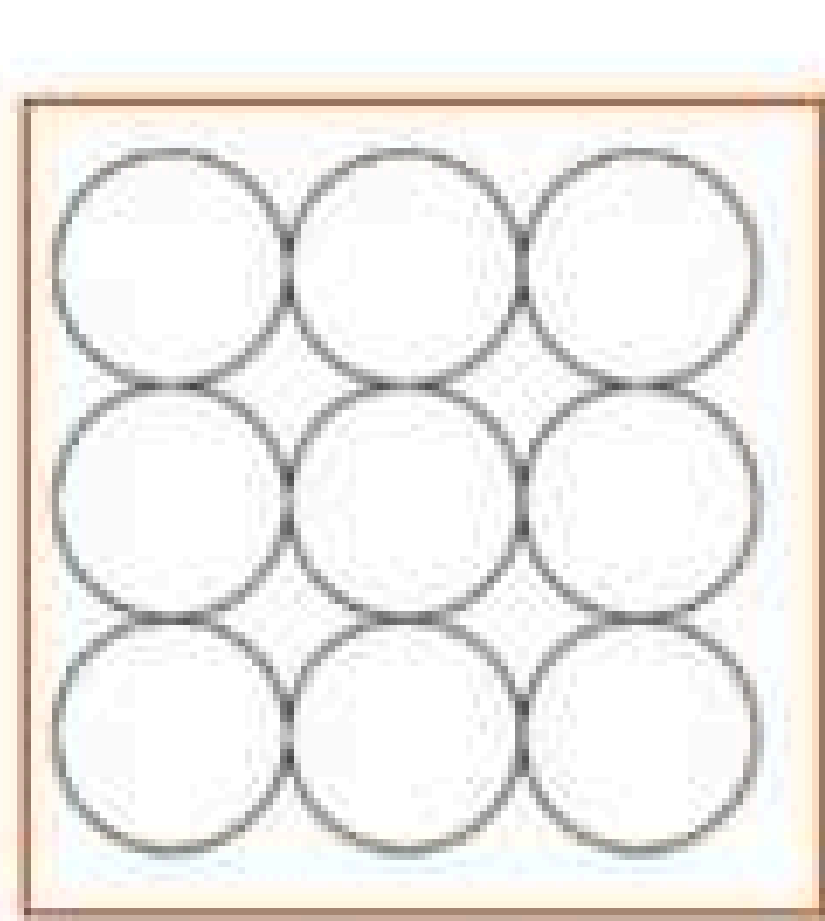
②内部有规律, 考虑内外分开看. 运动方向: 绕圈(顺/逆时针)

③内部无规律, 考虑常规平移. 运动方向: 直线(上下、左右、斜对角线), 且方向可变。

平移--破解出题者喜好--宫格类

1. 平移

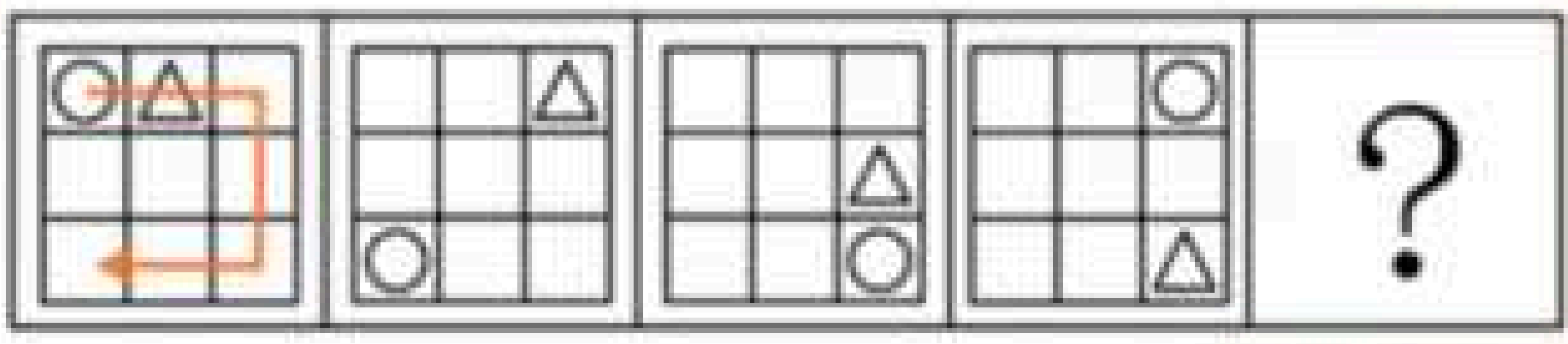
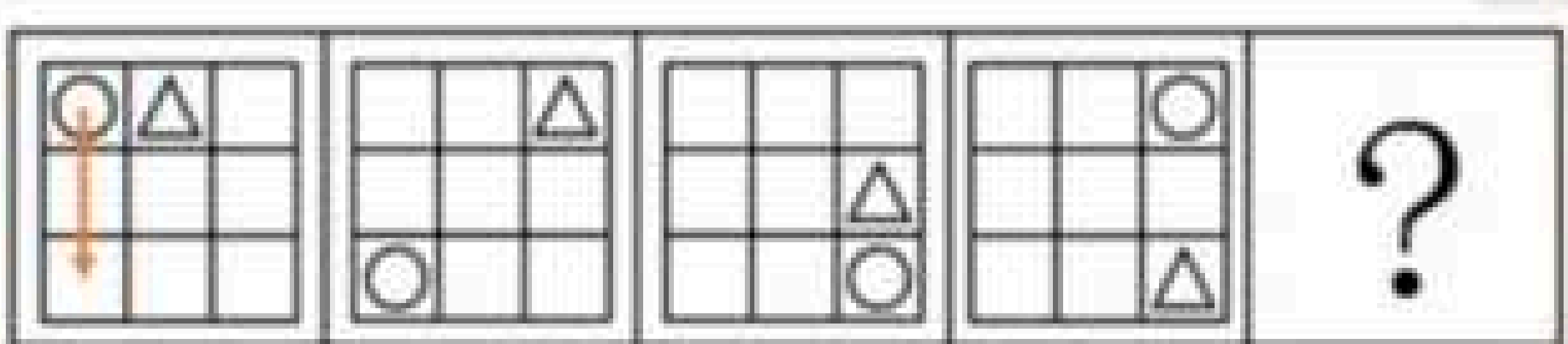
9宫格类



直线运动



绕圈运动

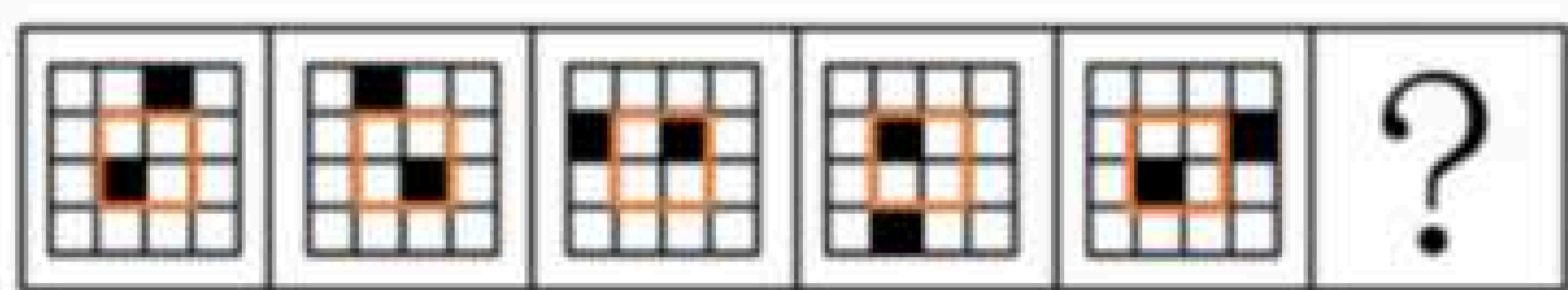
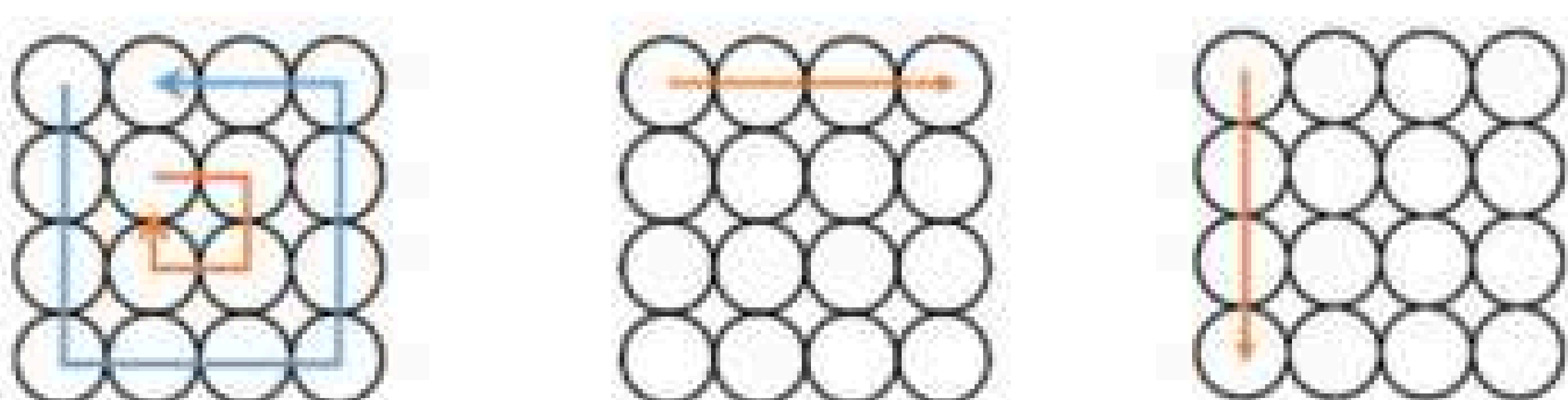
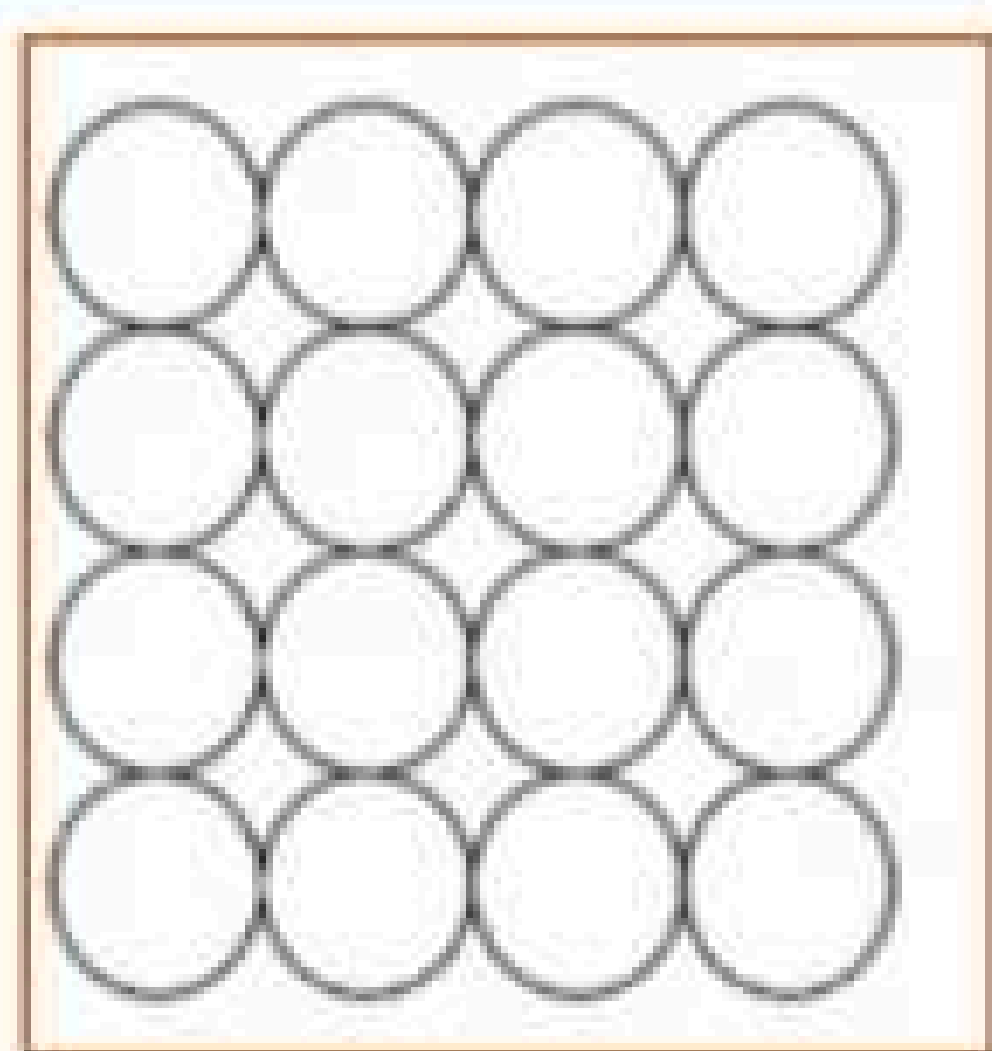


加密: 增加元素

解密: 拆分思维, 就近假设

- 学习重点
- 1. 如何识别考点 平移?--数个数
 - 2. 哪个方向运动?--绕圈居多

16宫格类



16宫格

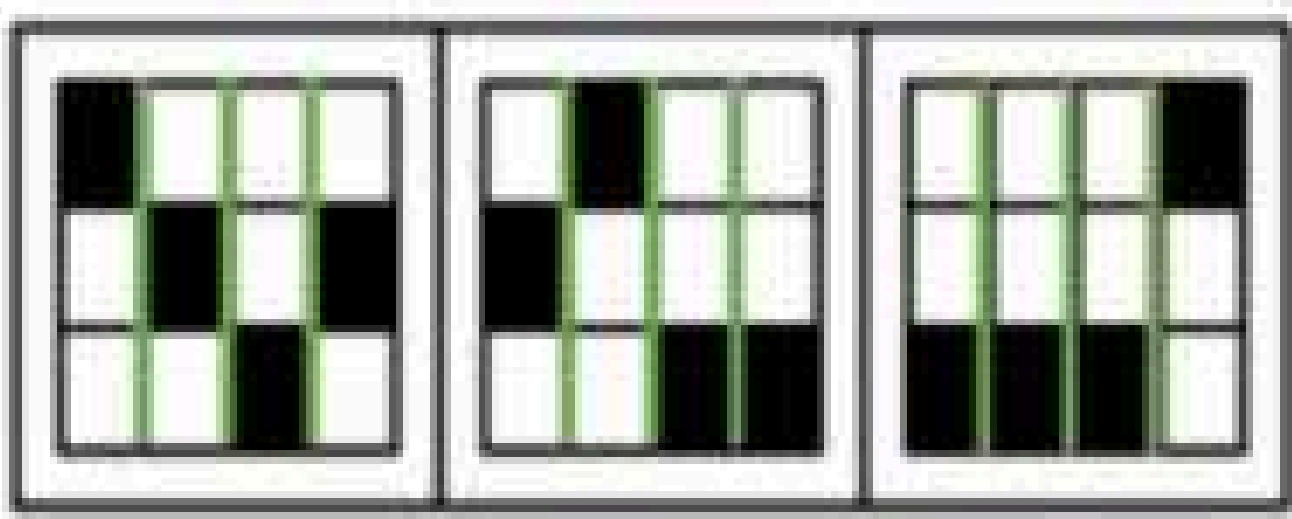
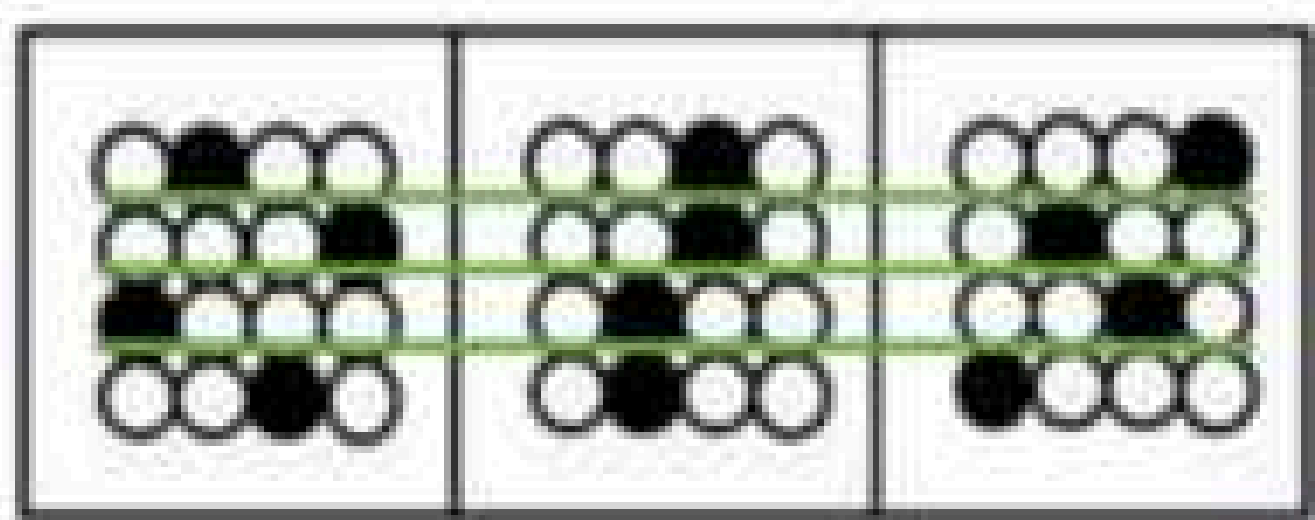
● 确定出 移动的“方向”?

(一) 数个数

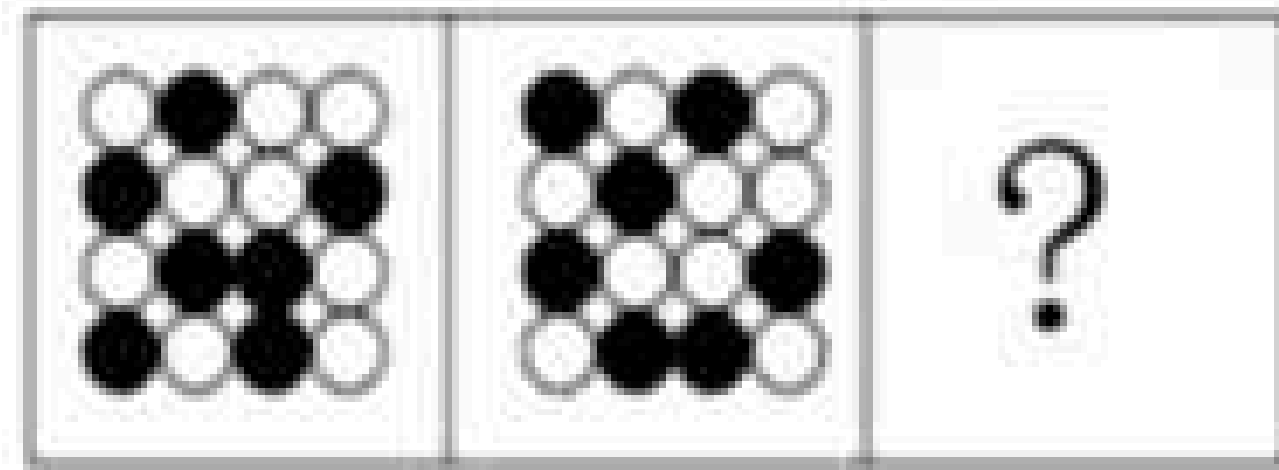
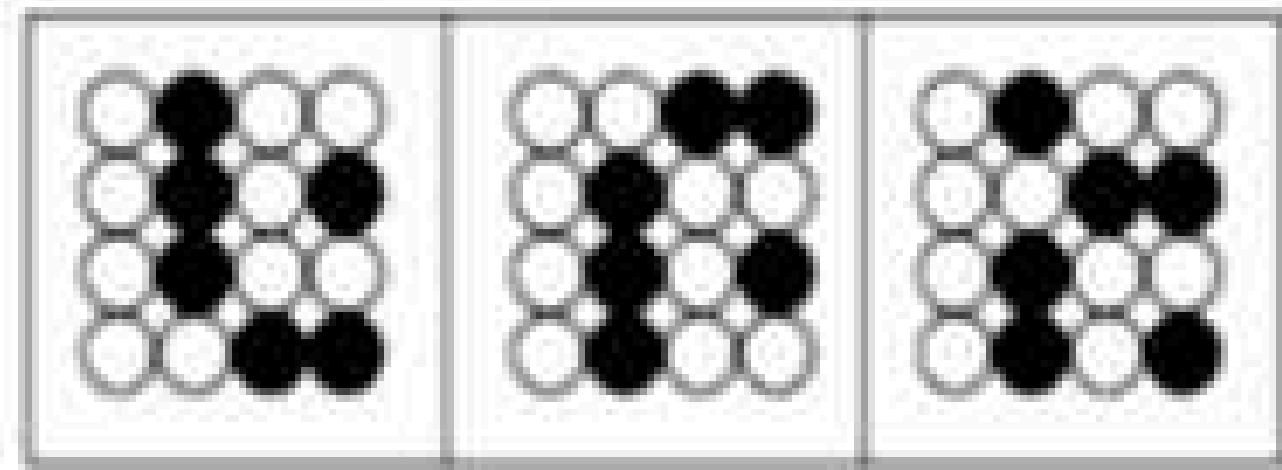
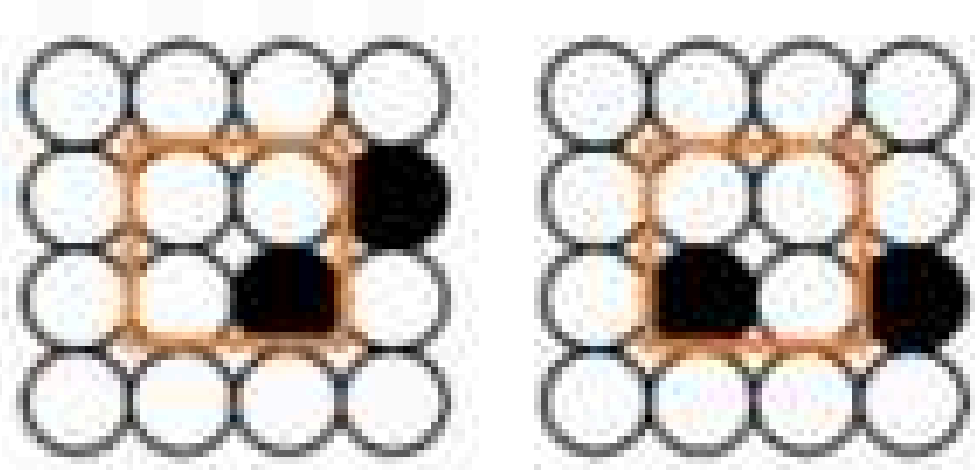
① 数每行/列个数

横向黑块数量相同→横向运动

纵向黑块数量相同→纵向运动



② 数内部个数



➢ 内部相等, 考虑内外分开看>

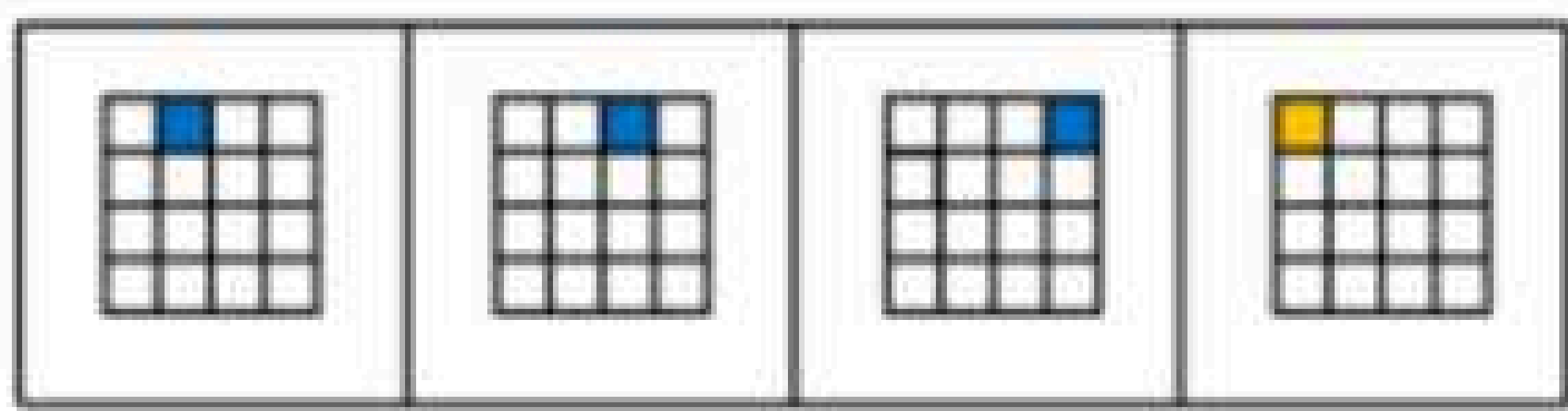
➢ 考情: 内部很少考查“重叠”情况 少一个排除

免费学习公众号: 樱有尽有

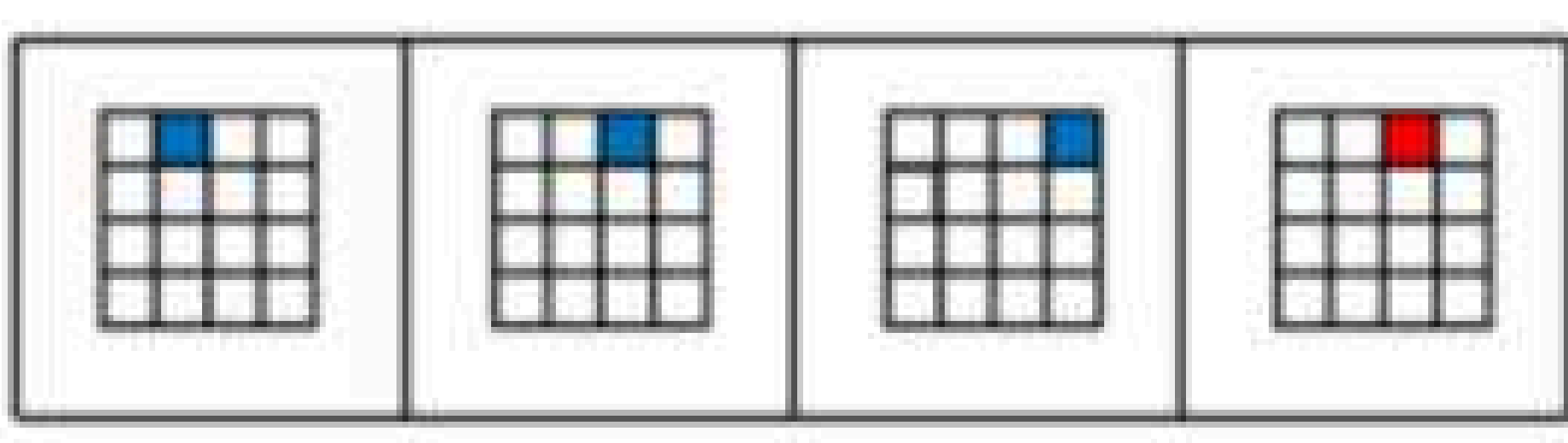
- 学习重点
- 1. 如何识别考点- 平移?--数个数
 - 2. 哪个方向运动?--数每行每列个数/数内部个数

● “走到头”考法

① 循环走: 从头开始



② 反弹走: 直接弹回



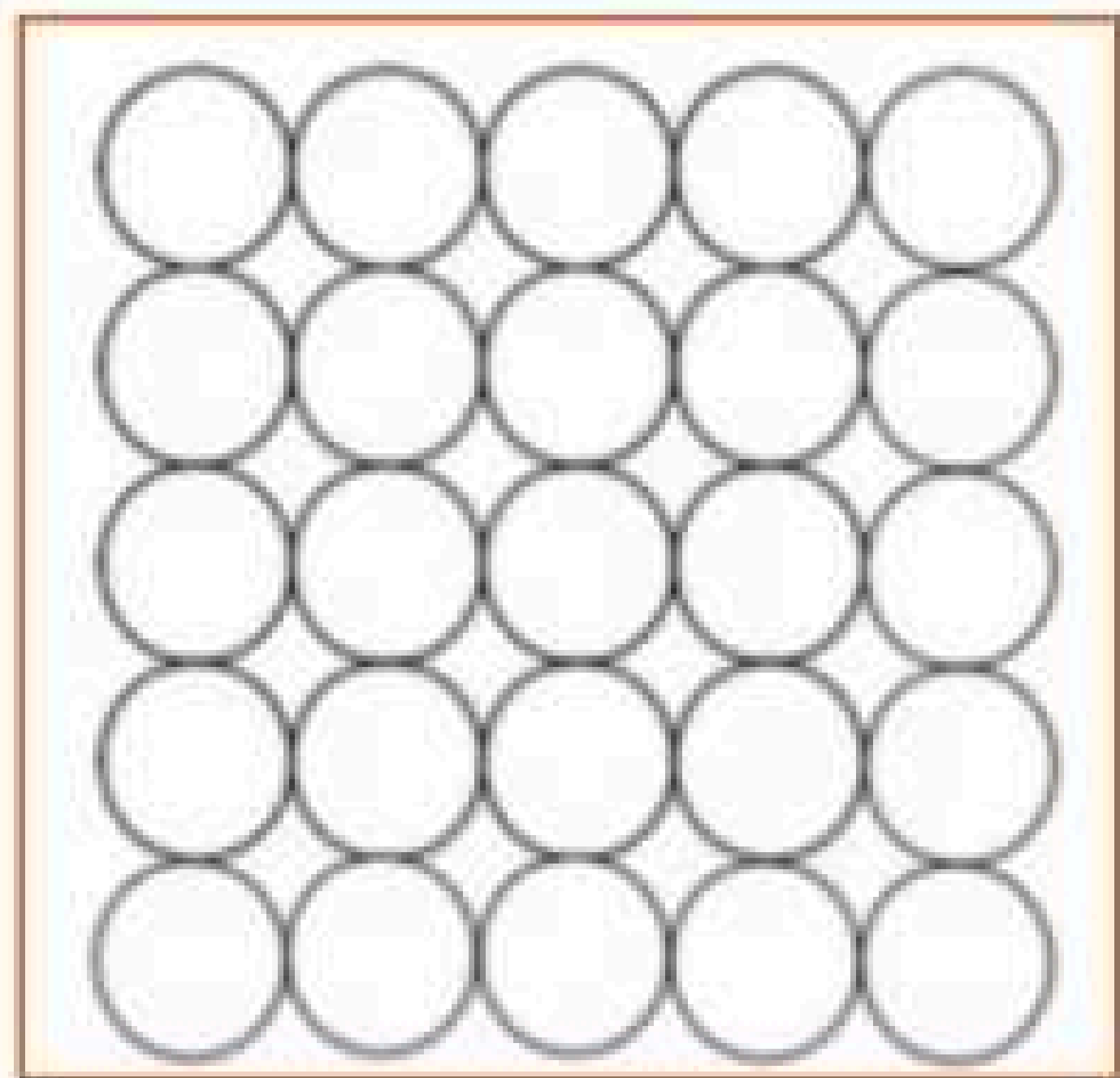


来源于小红书@贝栗子

平移--破解出题者喜好--宫格类

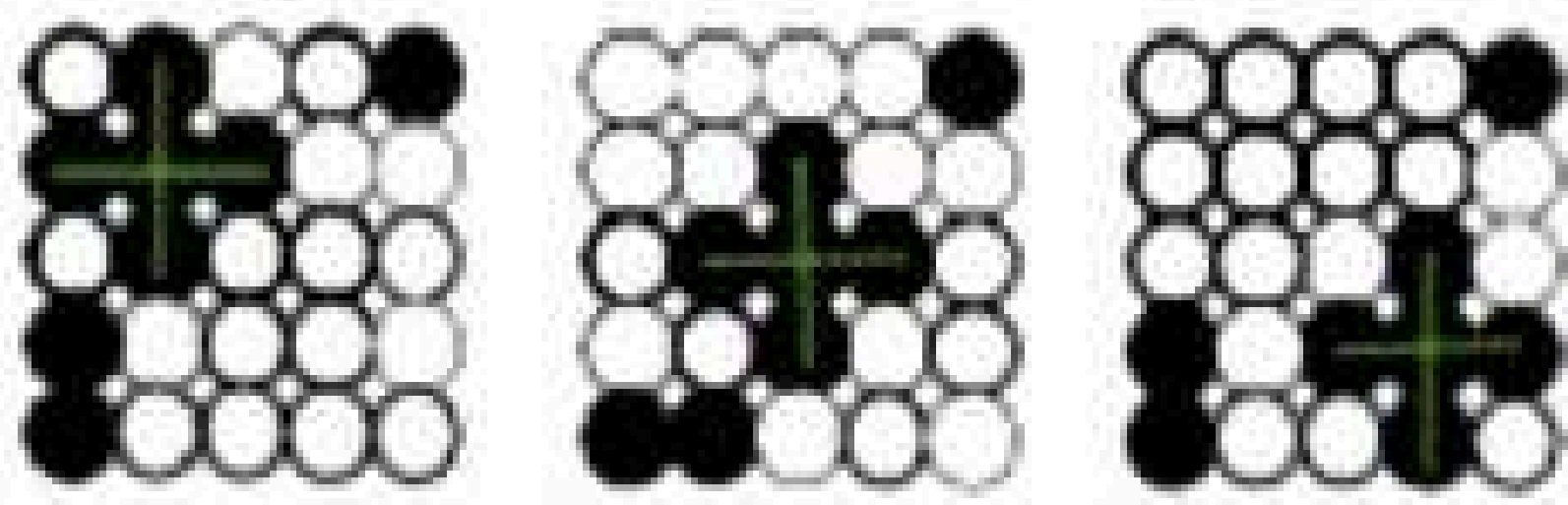
1. 平移

25宫格类



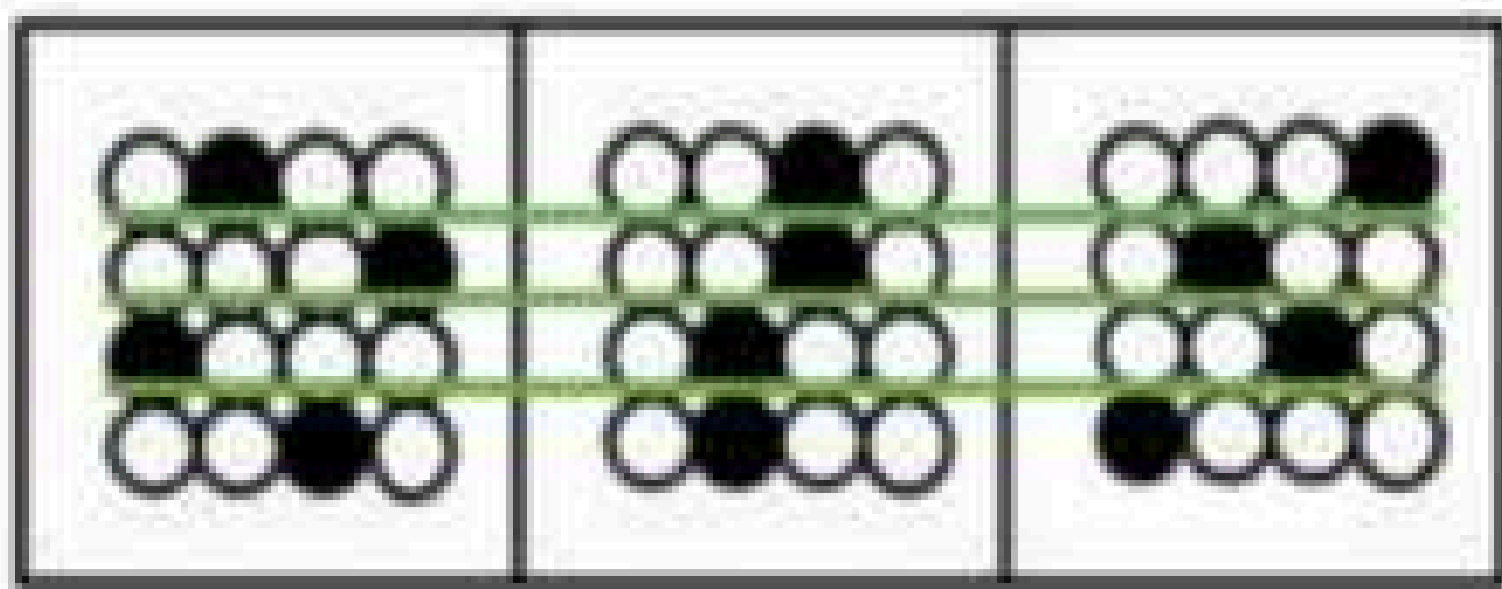
● 如何定方向？

(一) 特殊图案(大区域) > 黑块较多

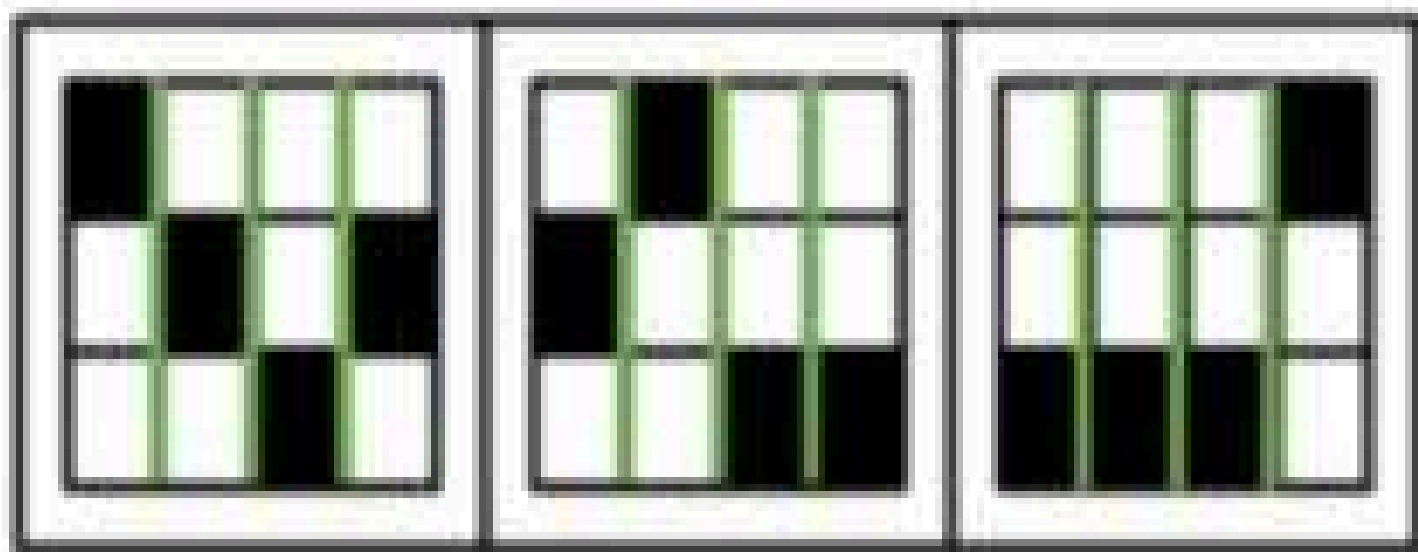


(二) 数个数 > 黑块较少

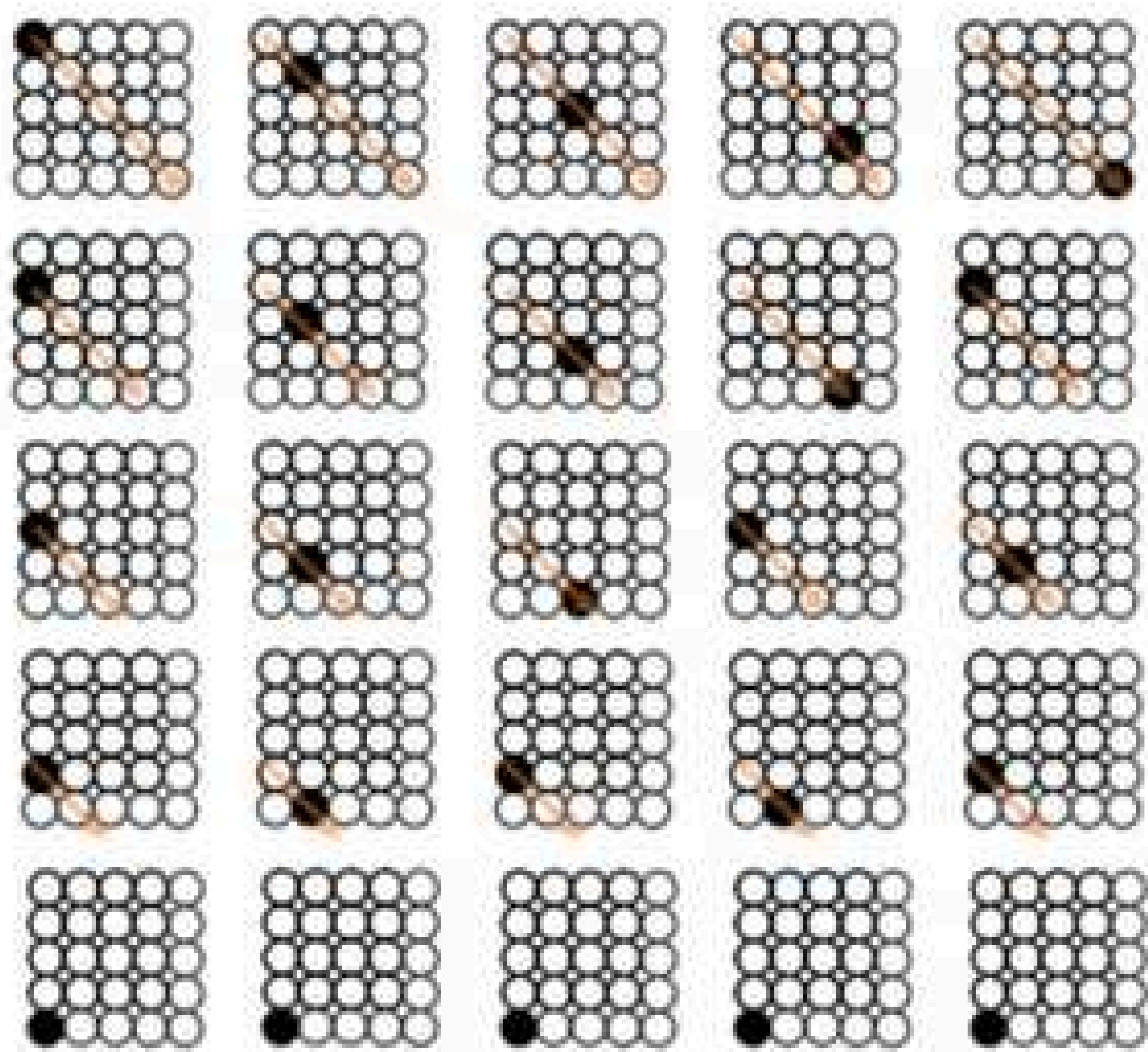
横向黑块数量相同 → 横向运动



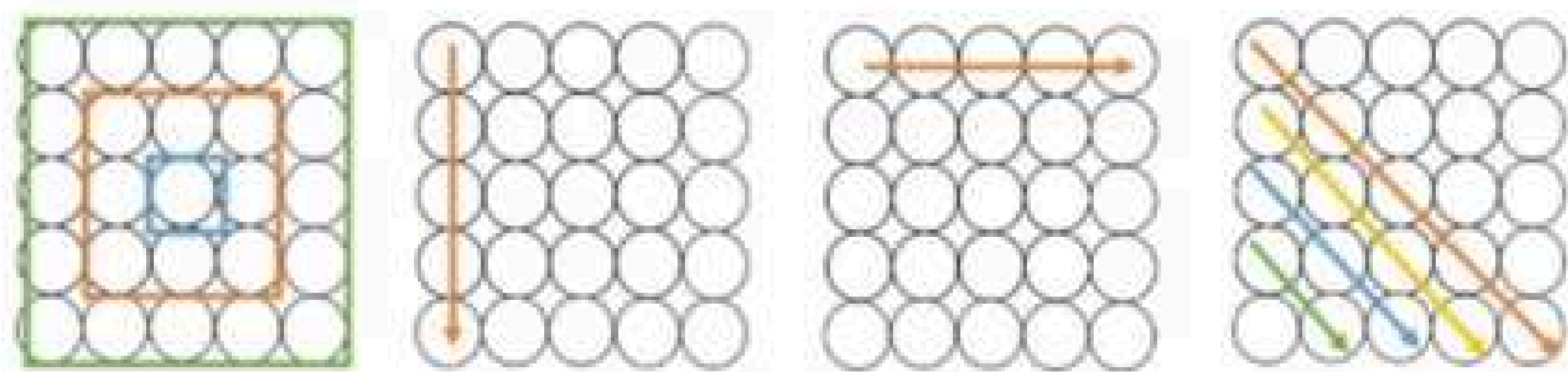
纵向黑块数量相同 → 纵向运动



● "25宫格斜着运动"



➢ 16宫格 VS 25宫格数

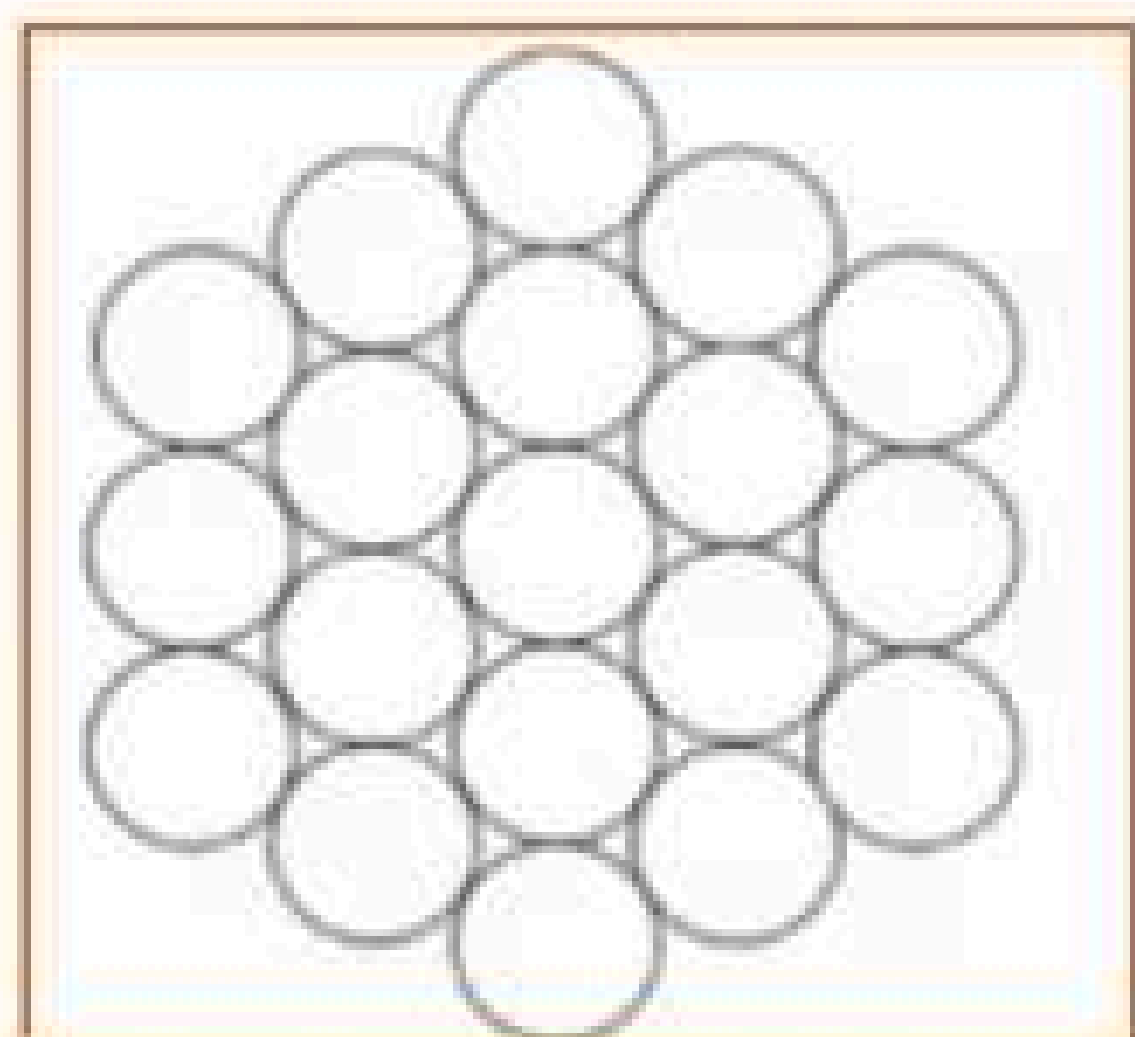


- 不同: ① 25宫格多了1圈
② 斜线运动空间更大了
③ 16→25, 黑块单个运动 → 整体运动
- 相同: 与16底层逻辑一样 (内外, 常规)

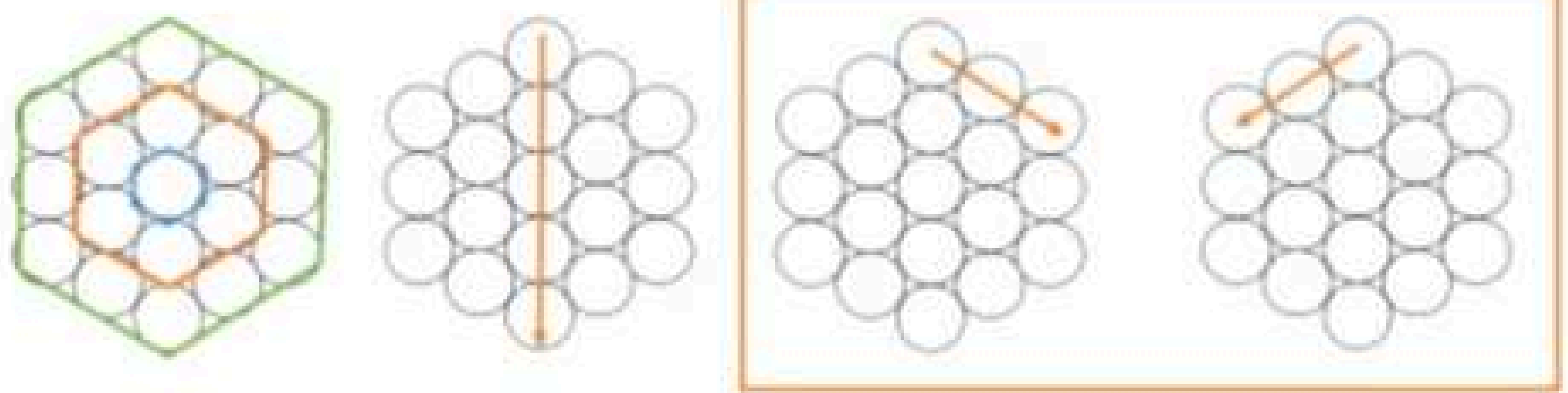
学习重点

- 1. 如何识别考点平移? -- 大图案
- 2. 哪个方向运动? -- 大图案 / 数个数

蜂窝类



➢ 25宫格数VS蜂窝类



不同: 与25底层逻辑一样 (内外, 常规)
拔高: 方向可变

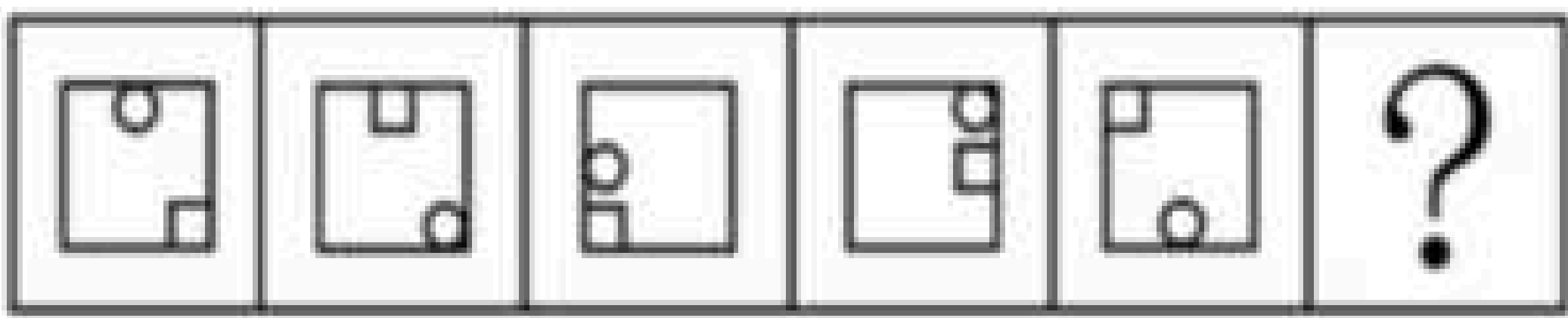
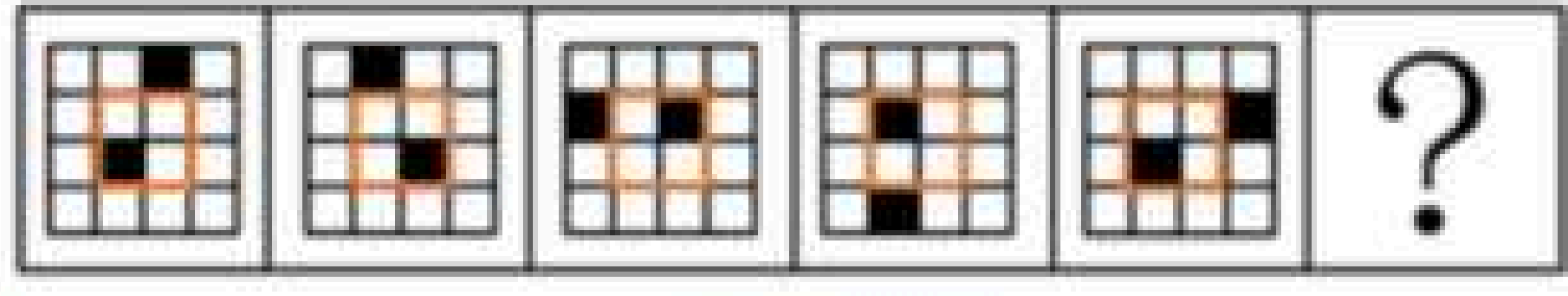
学习重点

- 1. 如何识别考点平移? -- 大图案 (多) / 个数 (少)
- 2. 哪个方向运动? -- 大图案 (多) / 个数 (少)

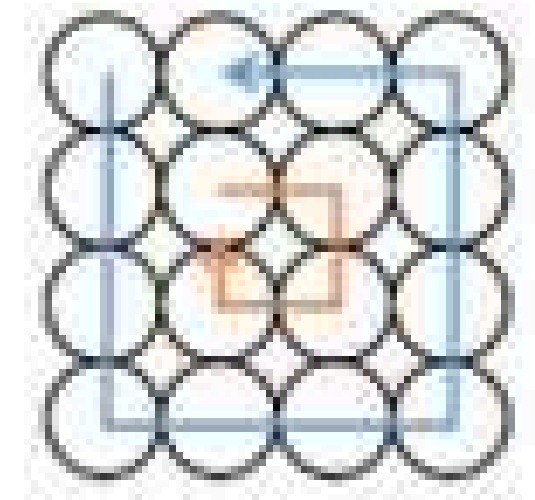
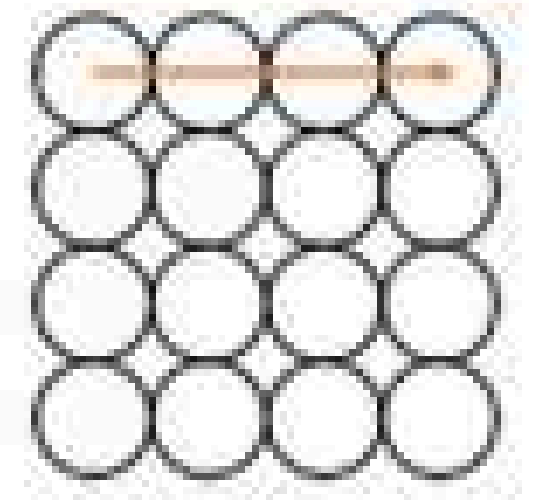
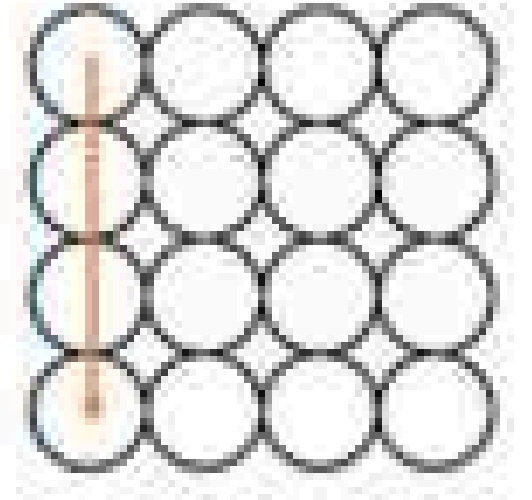
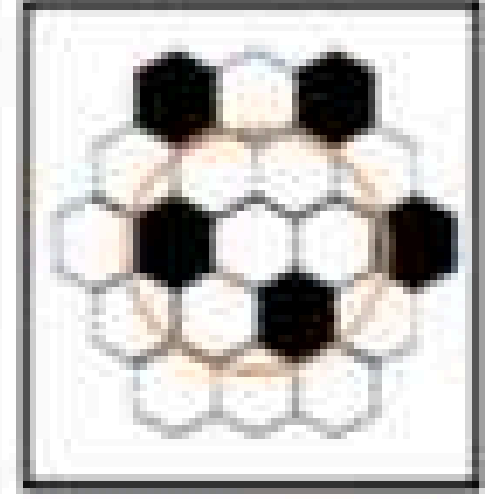
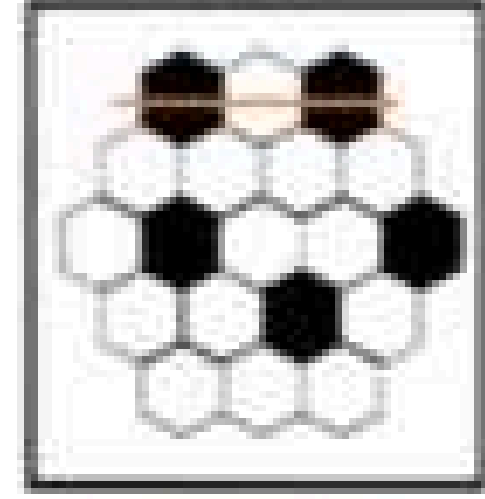
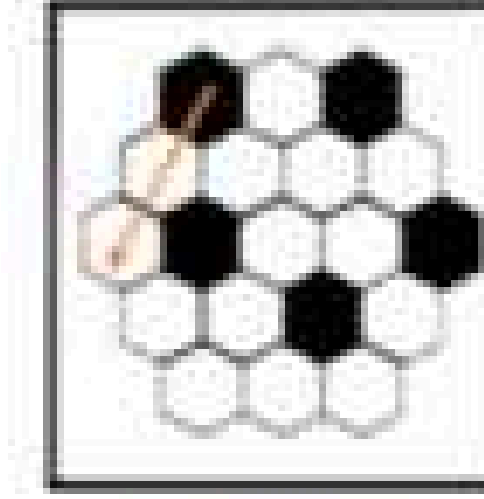
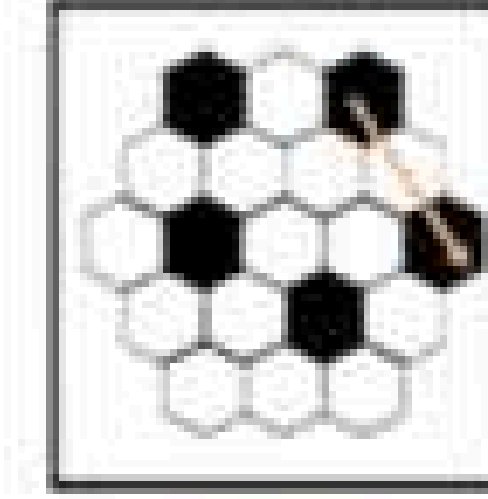
平移-破解出题者“小心思”

1. 平移

加密1

加密:  → 

解密:

16宫格 蜂窝类

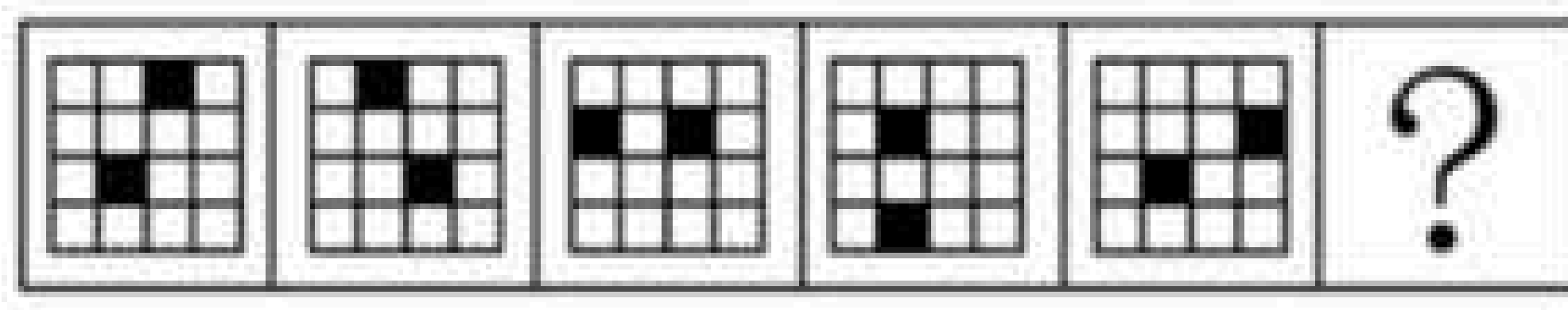
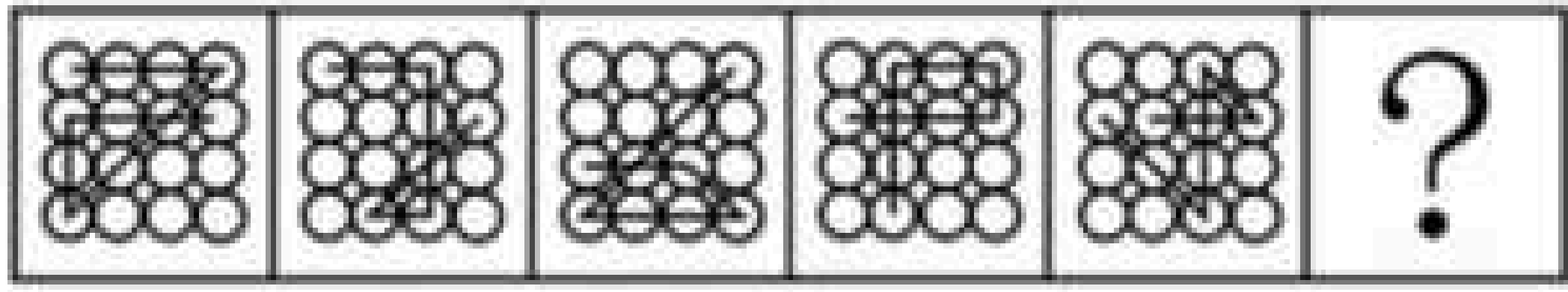
内外分开看 横向 左斜 右斜

【答题思路】:

- ① 确定“平移”后,第一步先观察内部是否有规律
- ② 内部有规律,考虑内外分开看。运动方向:绕圈(顺/逆时针)
- ③ 内部无规律,考虑常规平移。运动方向:直线(上下、左右、斜对角线),且方向可变。

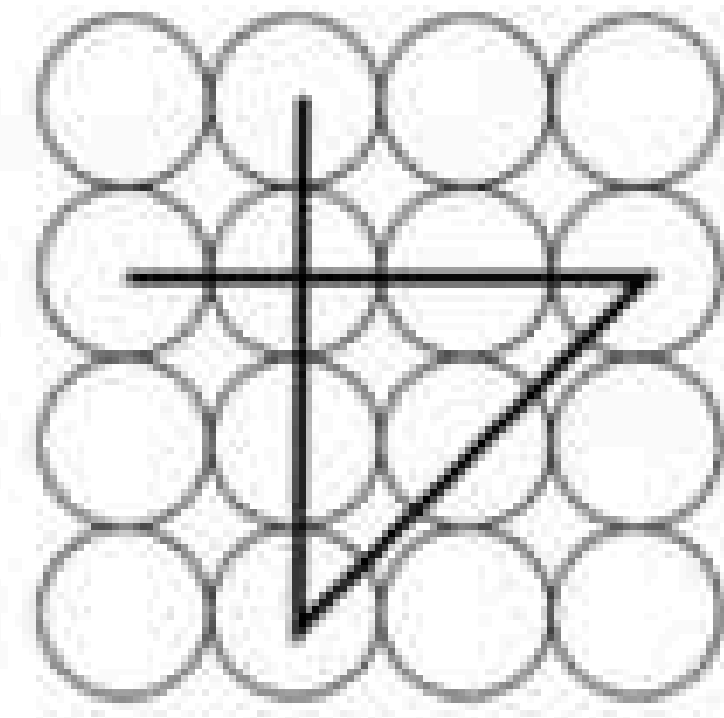
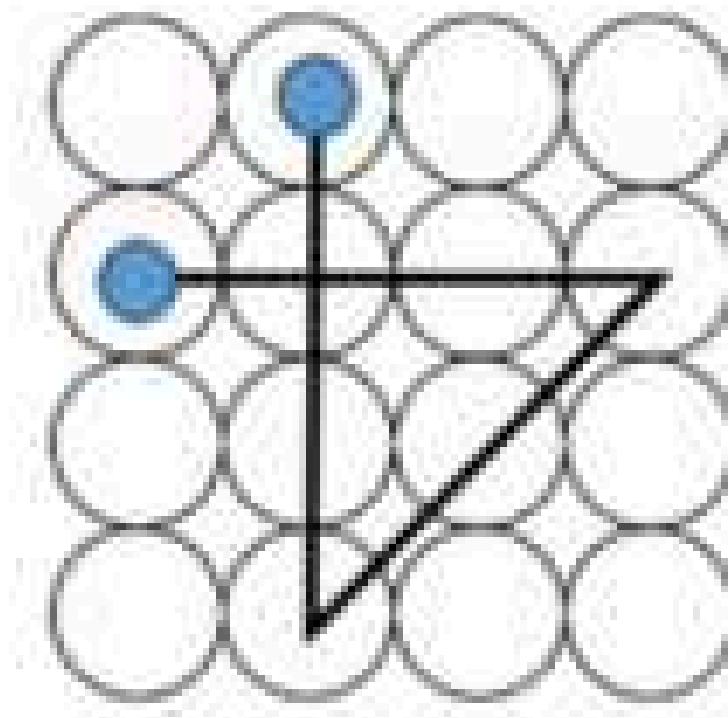
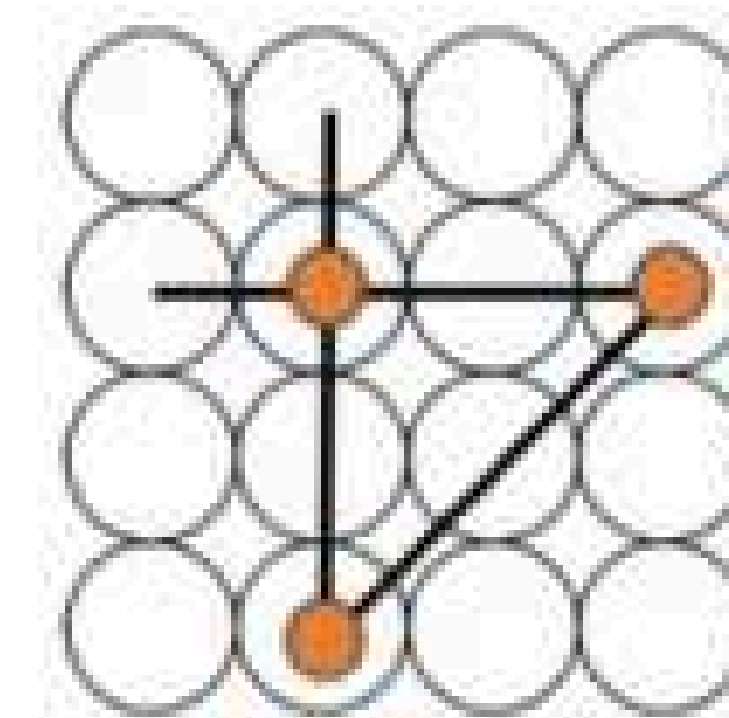
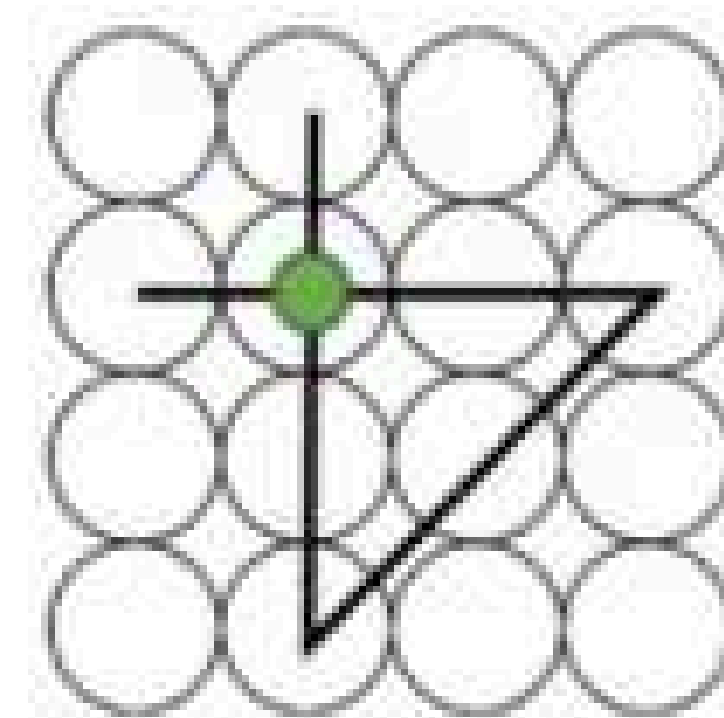
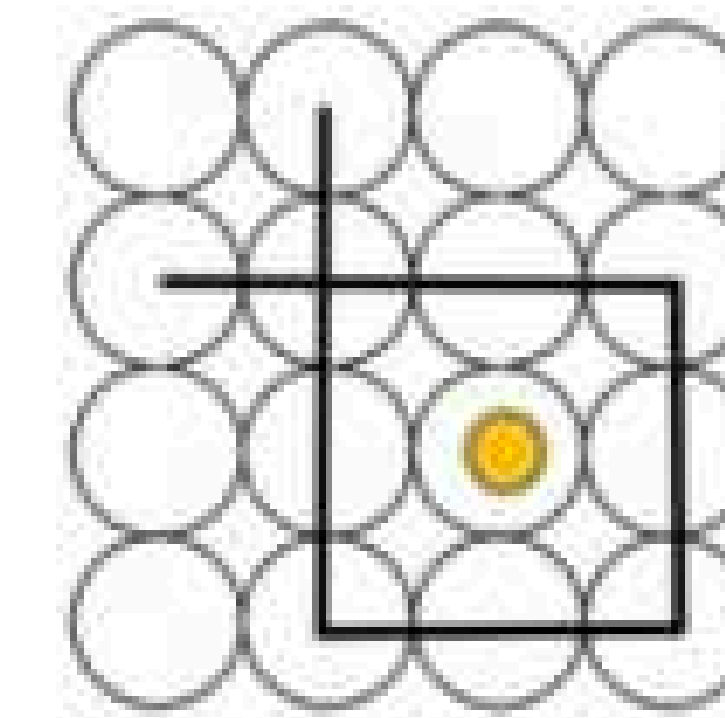
解密:
内部有规律,考虑内外分开看
1. 16宫格
2. 蜂窝类

加密2

加密:  → 

黑块/元素运动 点的运动

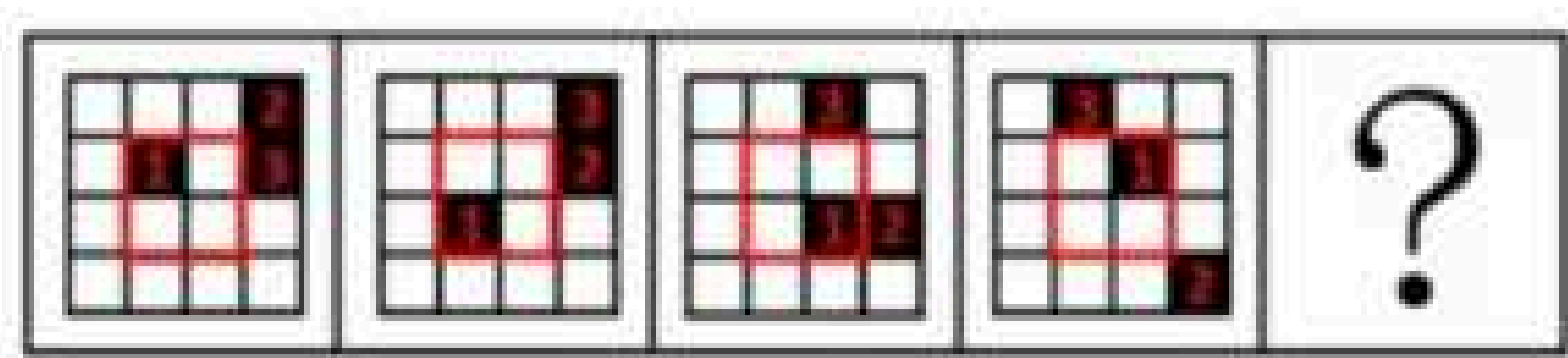
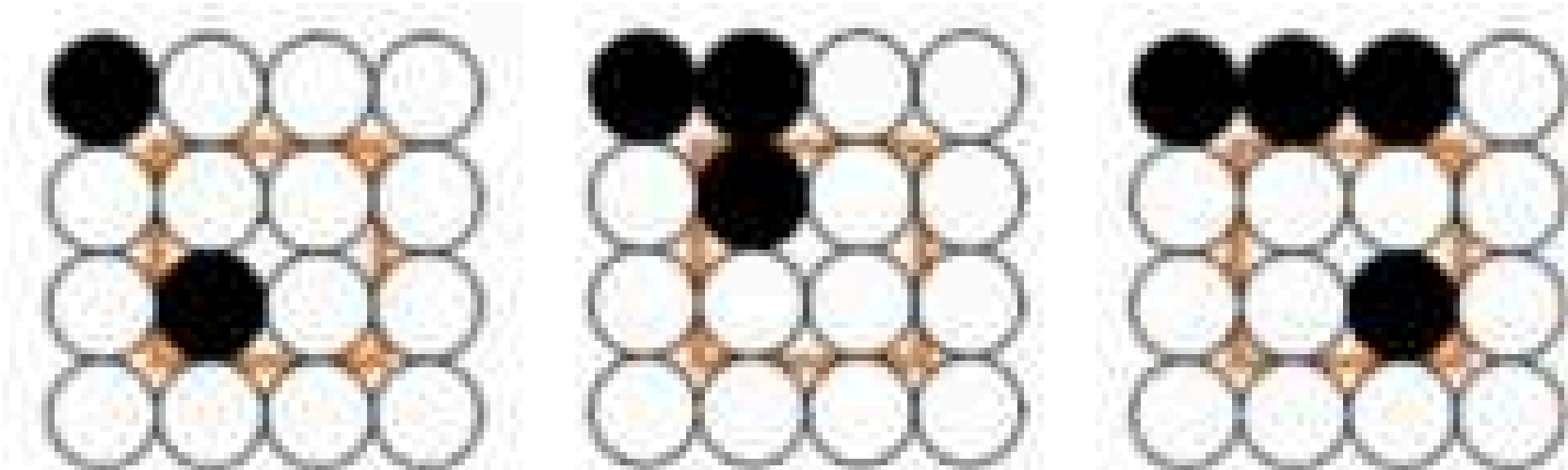
解密: 端点, 交点, 十字交点, 框内球【关注内部】

➤ 端点: 引发线段=1条 ➤ 交点: 引发线段>1条 ➤ 十字交点: 引发线段4条

点的运动

加密3

加密:  → 

总个数相等 总个数增加

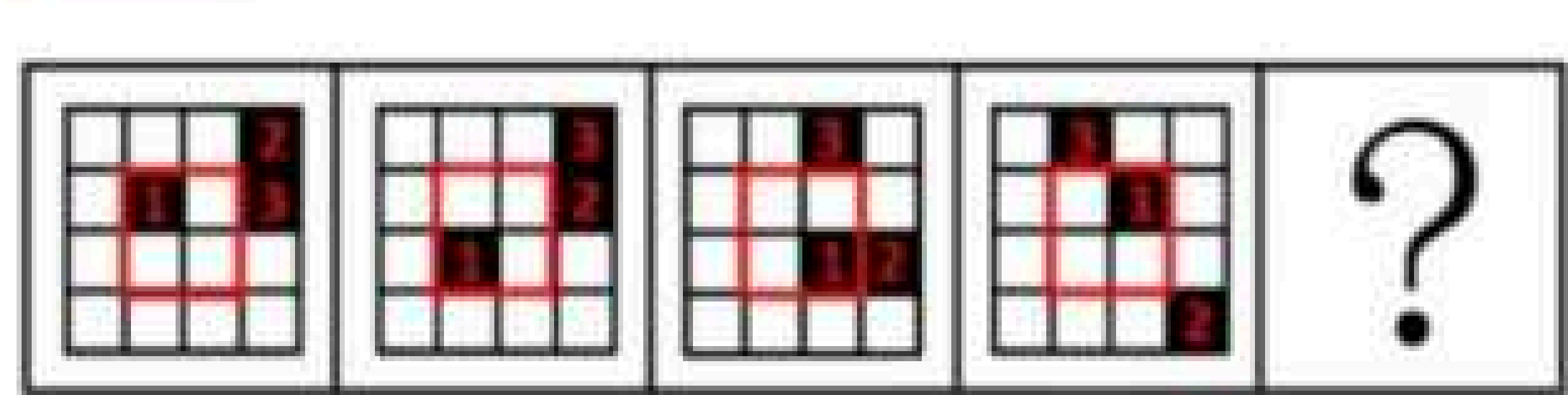
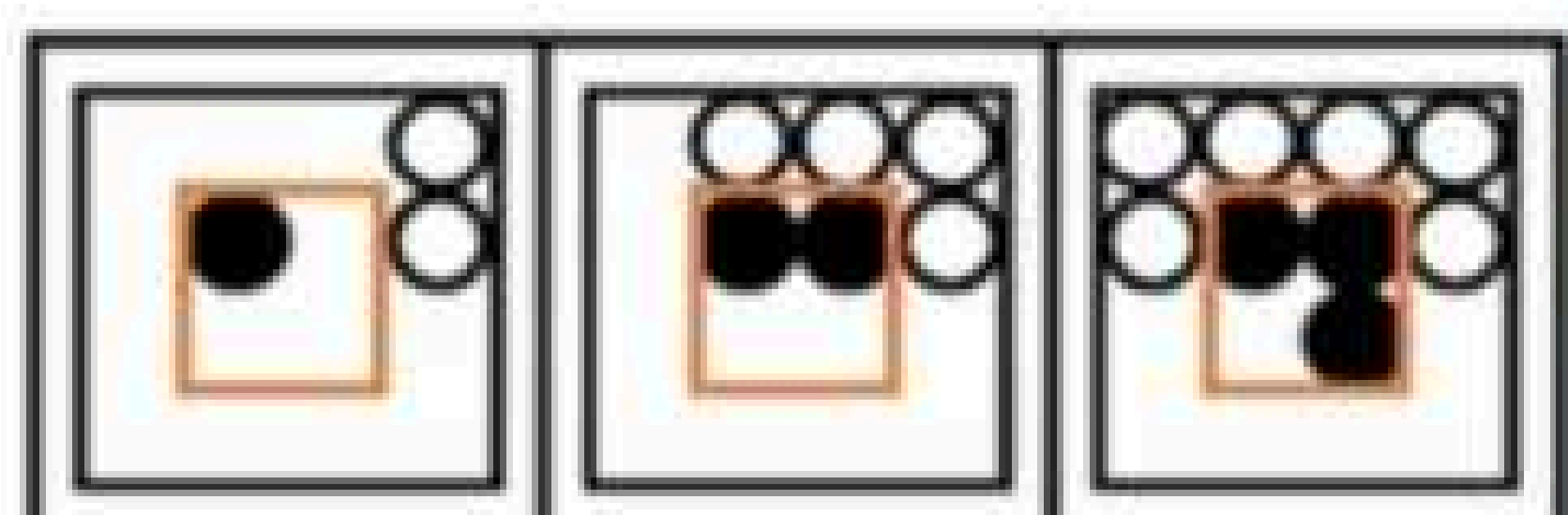
解密: ① 16宫格内部相等, 优先考虑“内外分开看”
② 外部个数增加 → 蜗牛的运动“保留运动痕迹”

内外各自看

平移-破解出题者“小心思”

1. 平移

加密4

加密:  → 

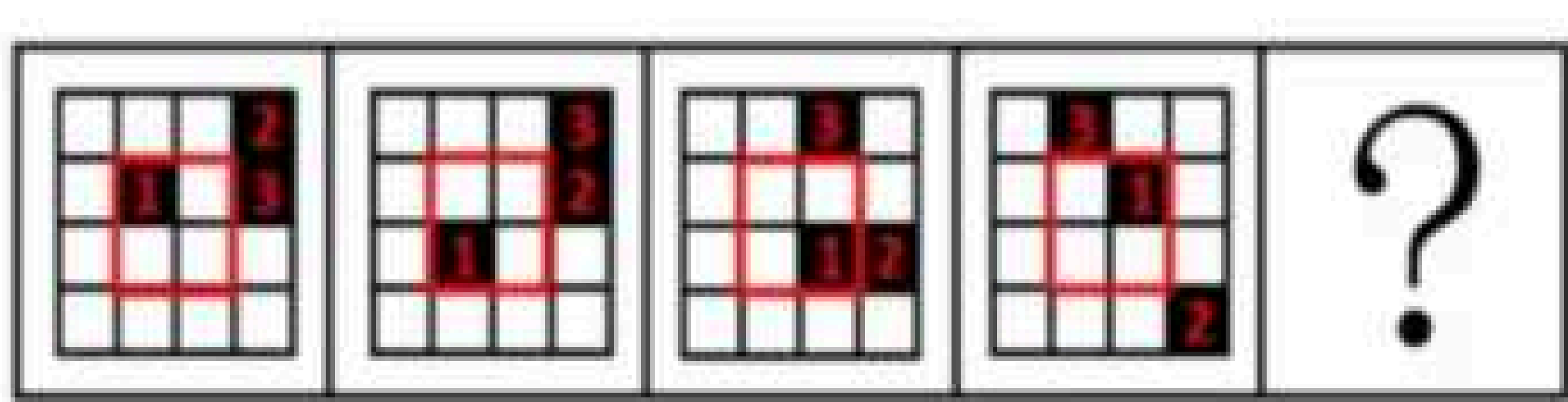
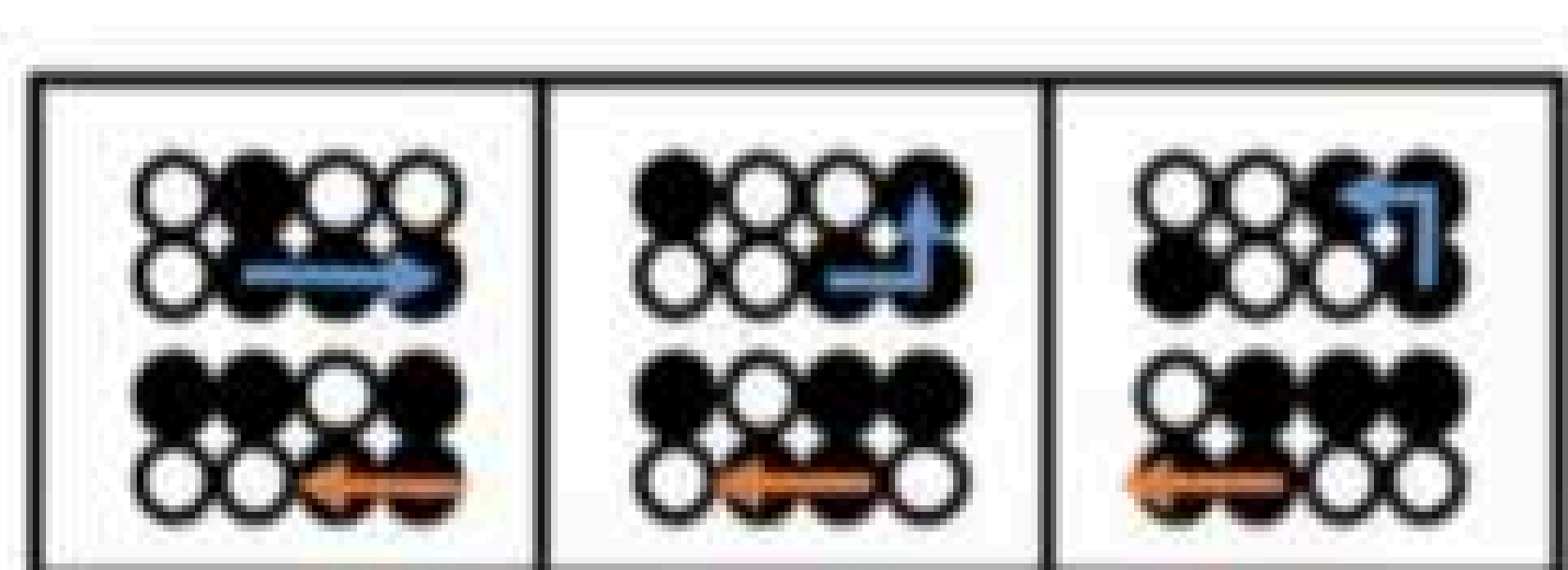
①: 内部相等 ②: 内部递增

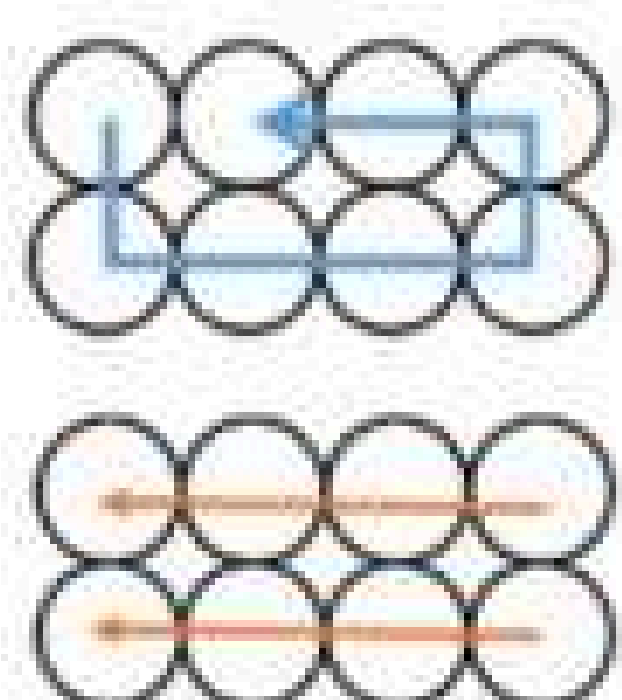
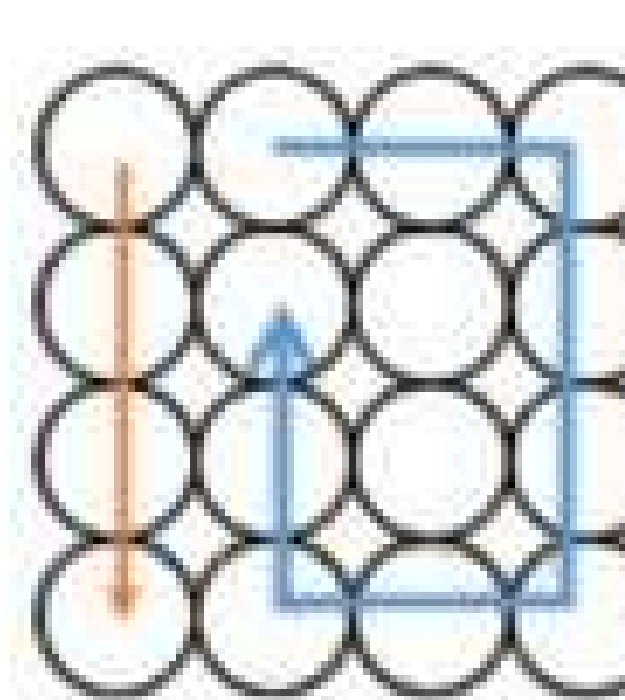
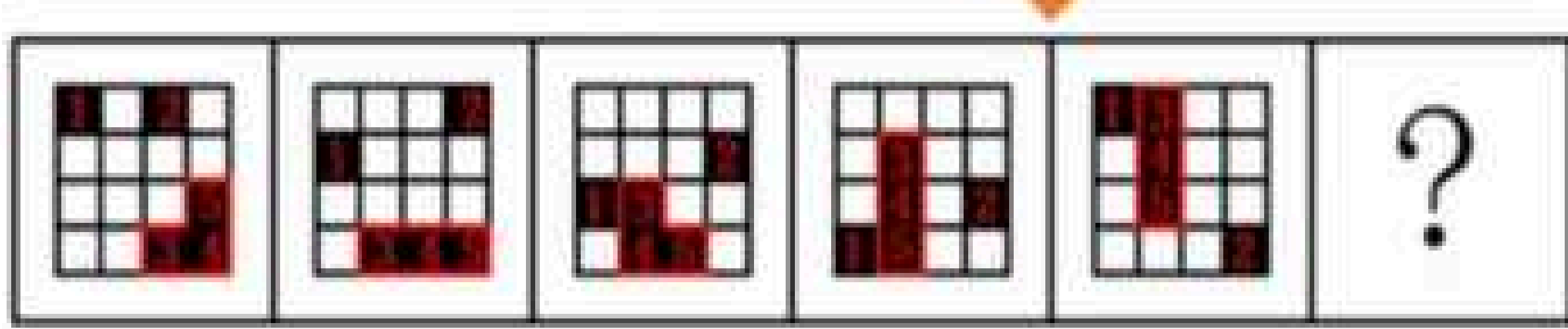
解密: 内部有规律 (3种类型):
①相等 ②递增 ③周期

③: 内部周期

解密:
内部有规律
(3种类型)
①相等
②递增
③周期

加密5-拔高

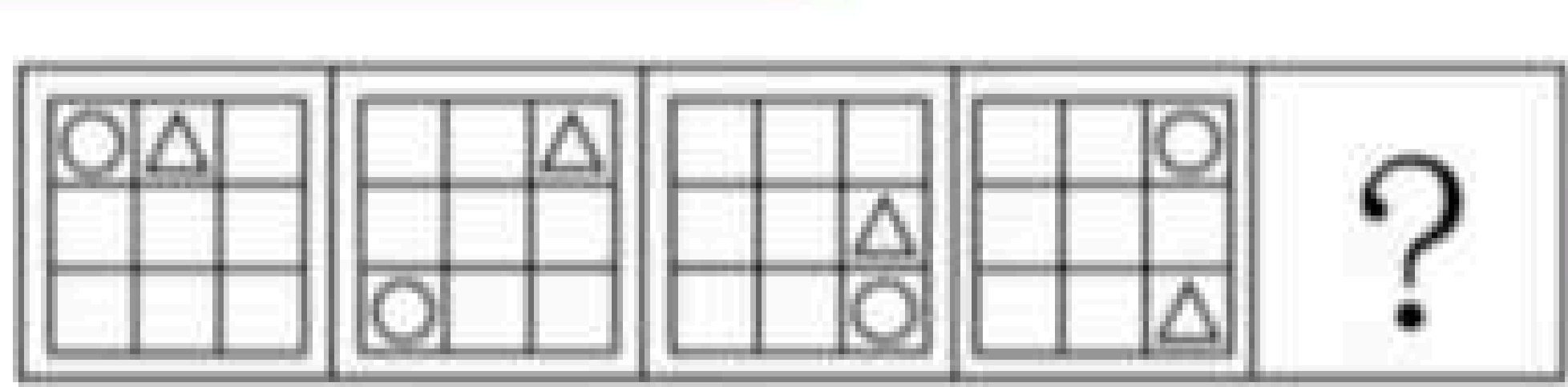
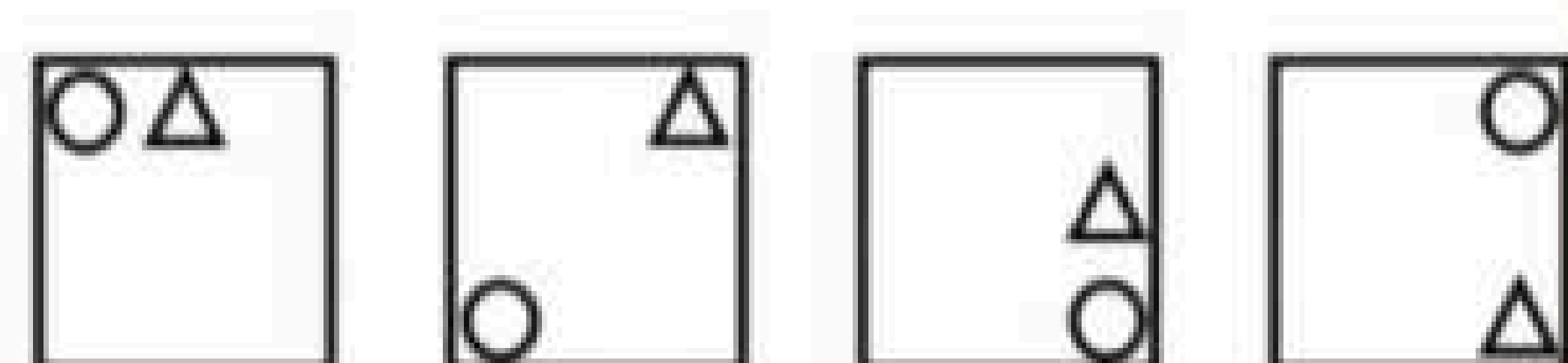
加密:  → 

解密:   

1. 提示: 分割2部分 2. 提示: 大面积图案 找方向: 找特殊 (大图案或唯一), 就近

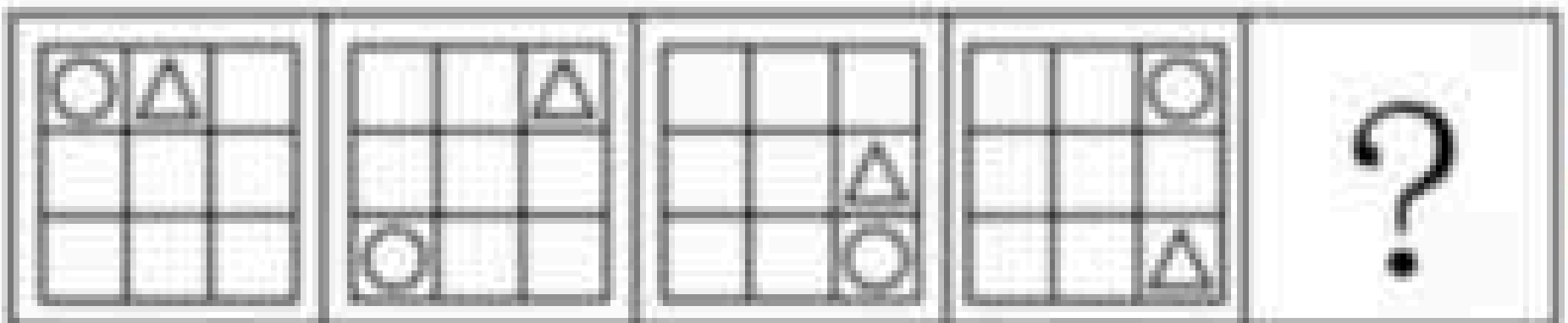
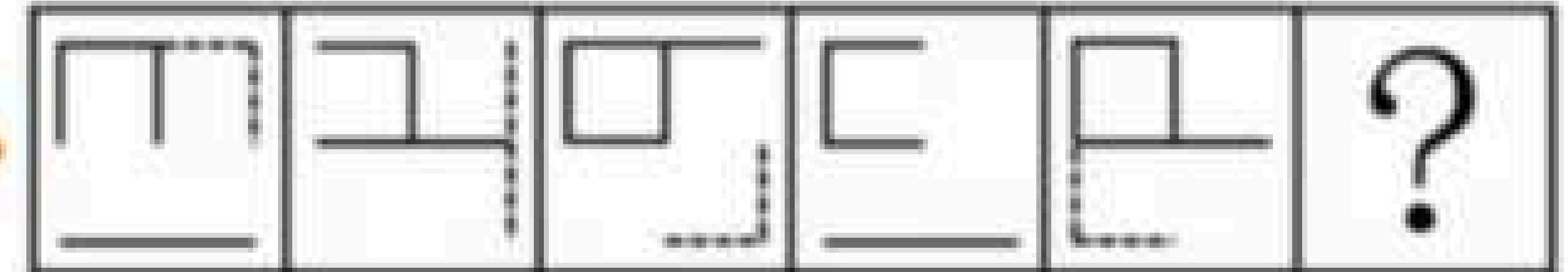
16宫格拆分
2种运动方式

加密6-拔高

加密:  → 

宫格类 非宫格类: 隐藏内部线条

解密: 就近原则, 做记号

加密:  → 

宫格类 非宫格类: 隐藏内部内外

线条运动不适合宫格

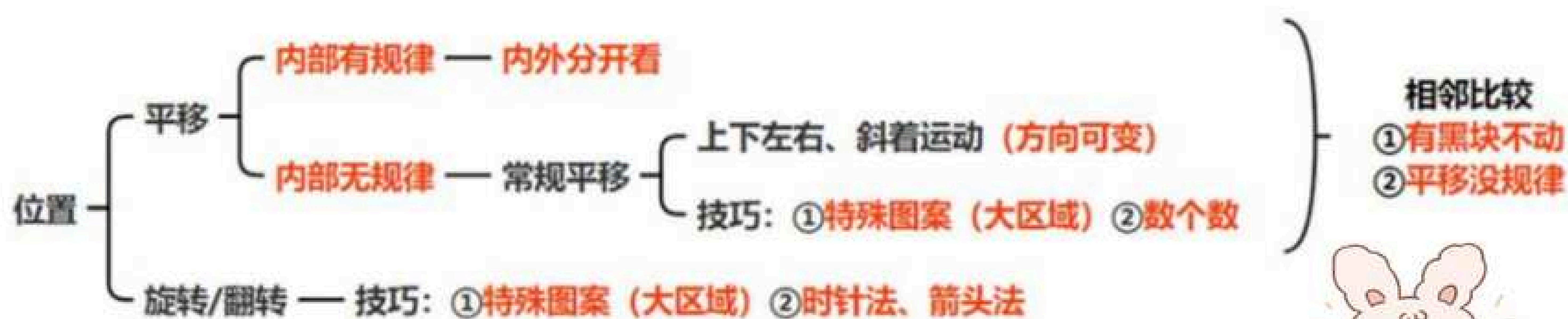
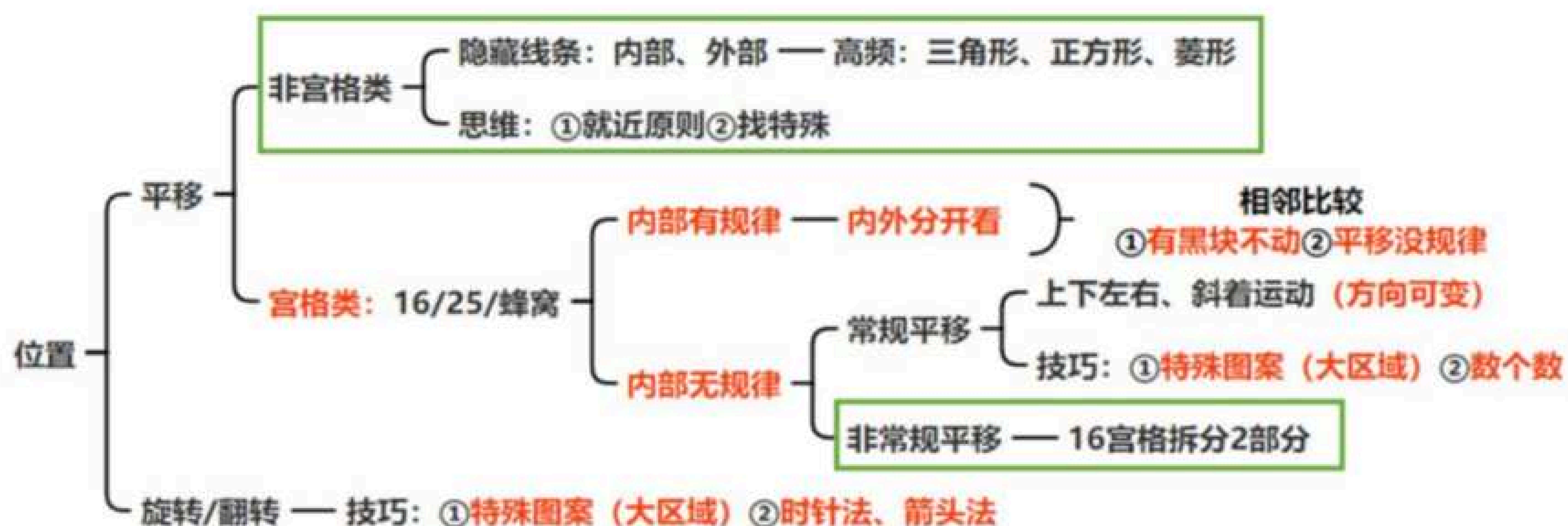
解密1: 隐藏图形 (高频)

解密2: 特殊线条

隐藏的考法
1. 就近原则, 做记号
2. 隐藏图形 高频
3. 特殊线条

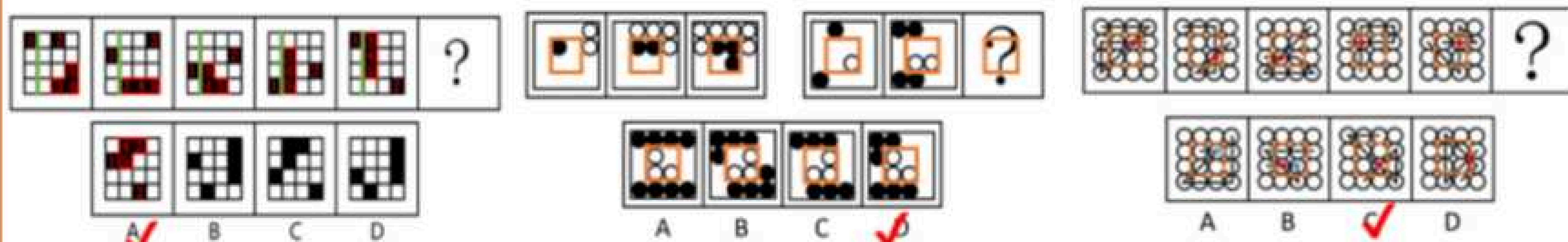
位置规律--平移小结

1. 平移



来源于小红书@贝栗子

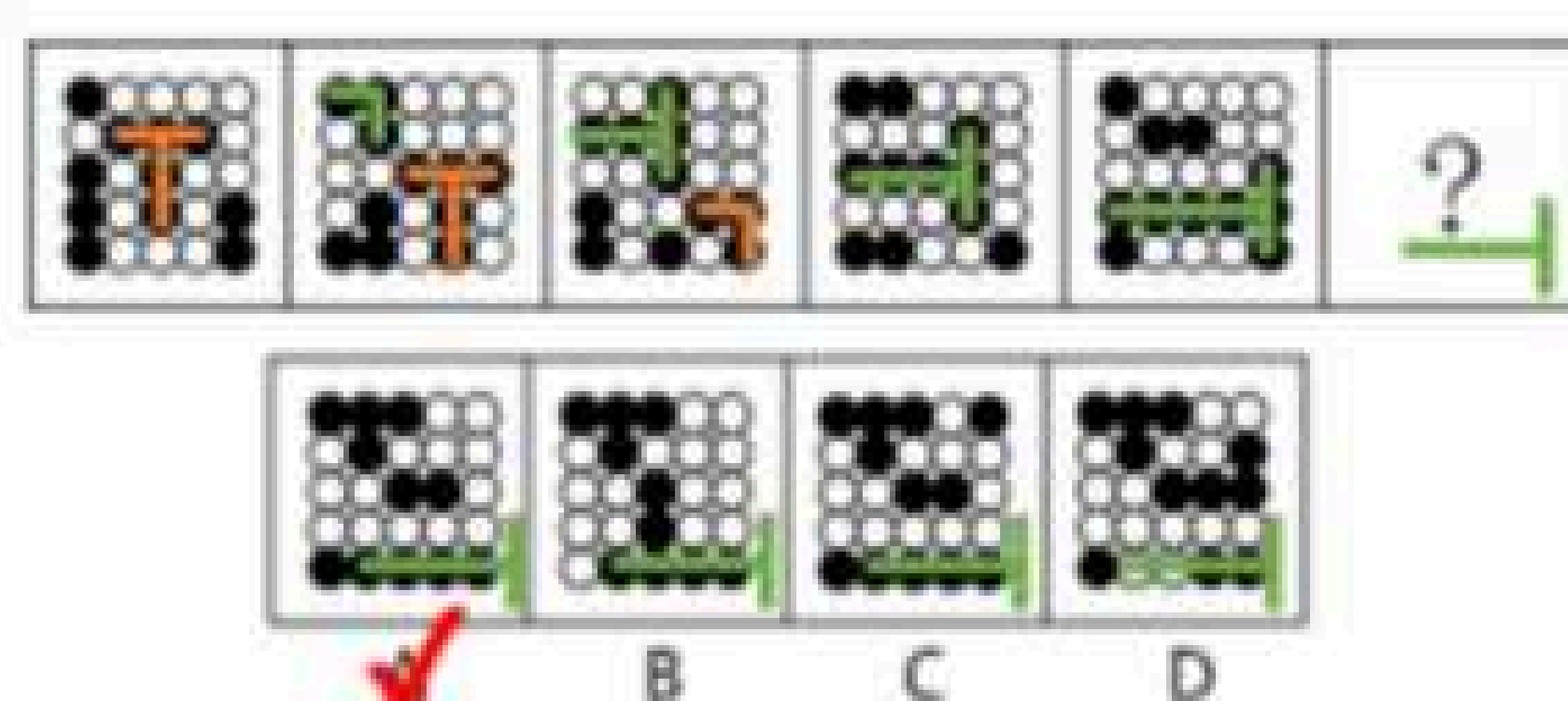
平移-拔高小结



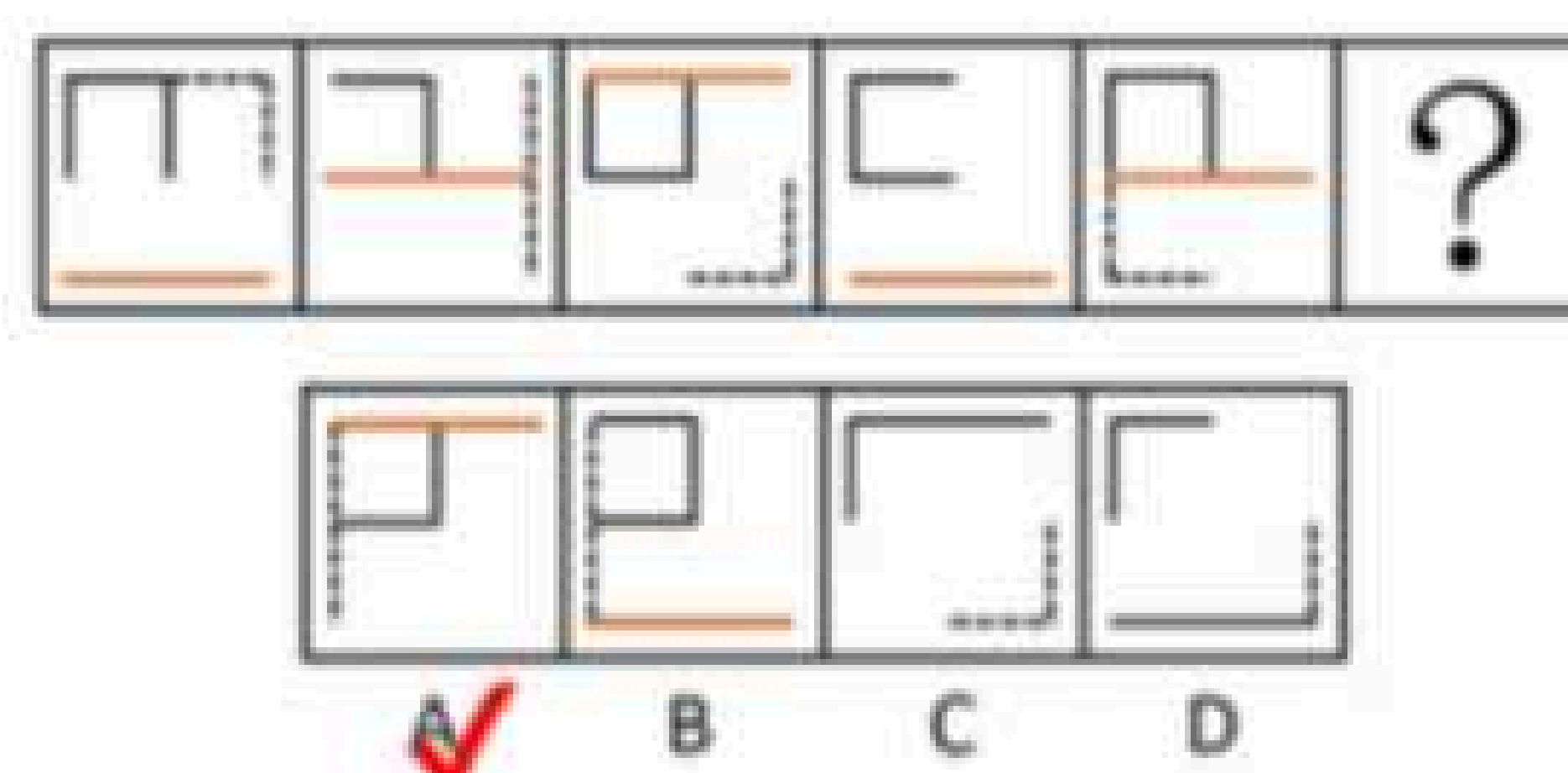
思维：16宫格 → 拆分2部分

思维：16宫格 → 内部有规律

思维：16宫格 → 内部交点



思维：斜着运动（大面积、个数）

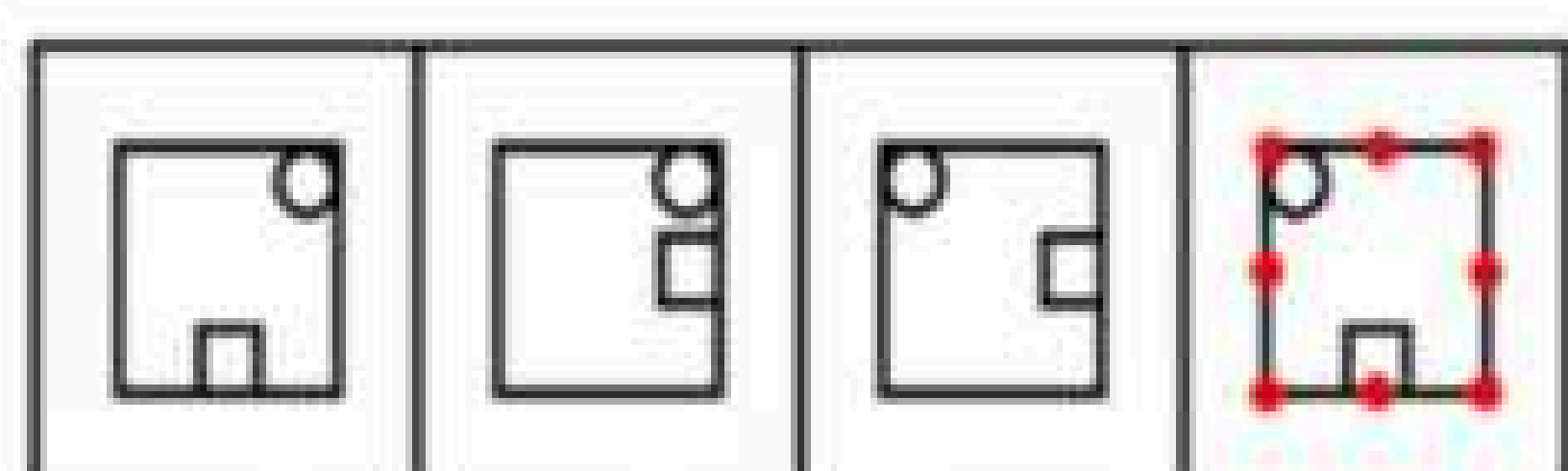
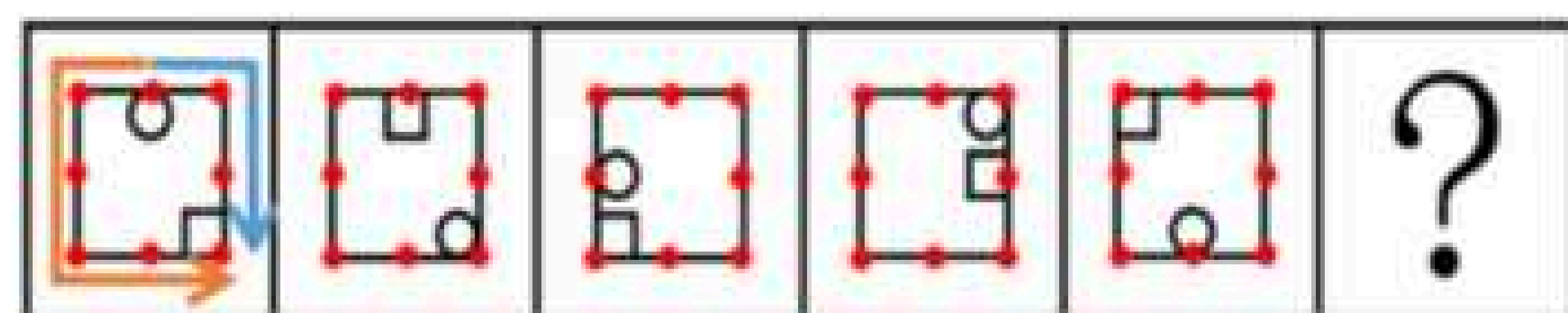


思维：隐藏线条（找特殊）

位置规律--平移小结

1. 平移

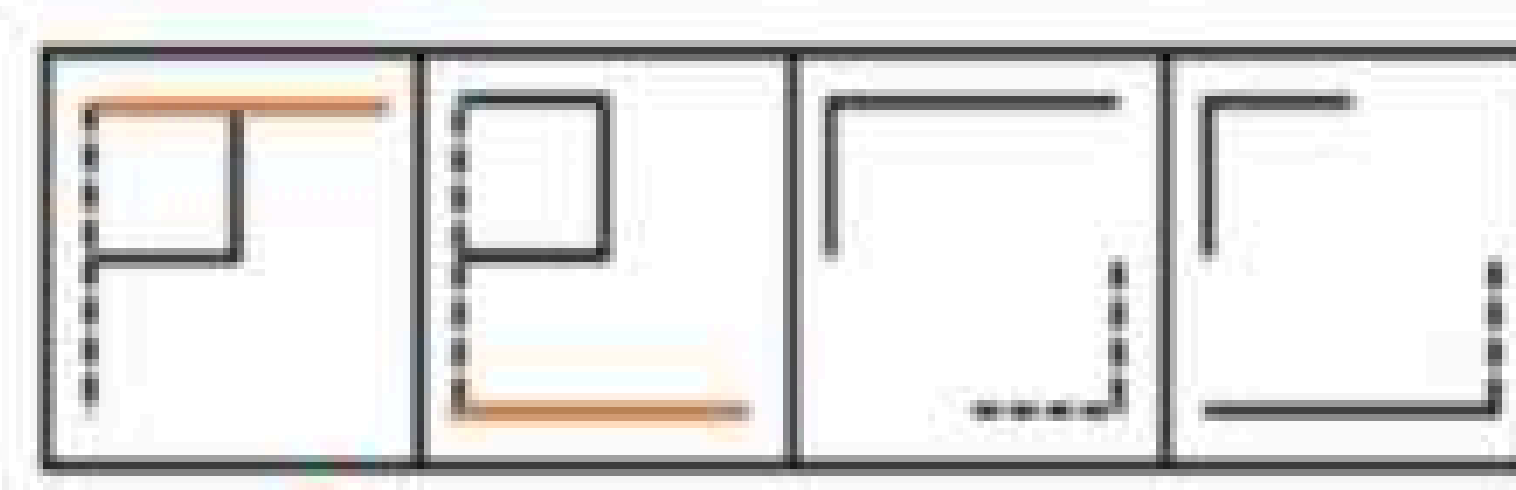
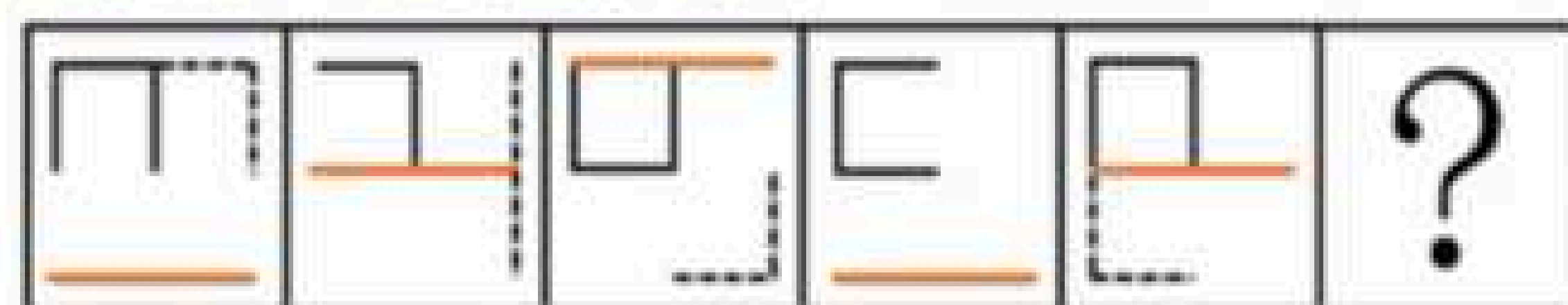
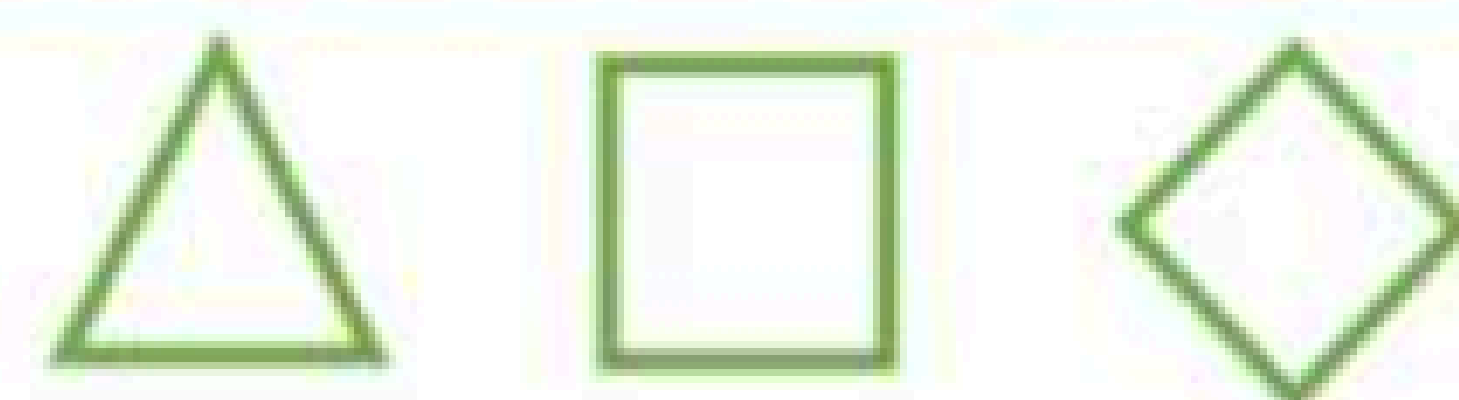
非宫格类：隐藏内部



思维：就近原则

思维：跳着看

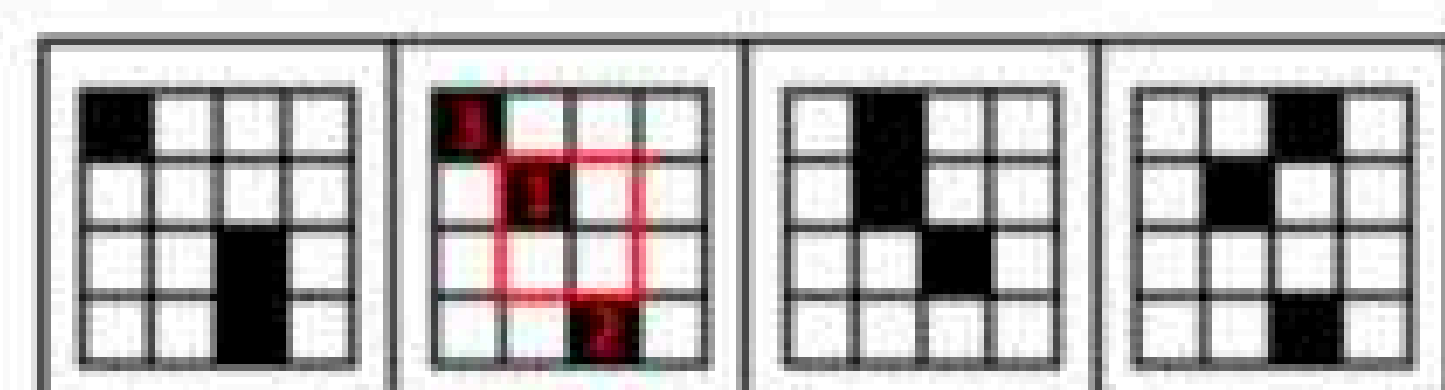
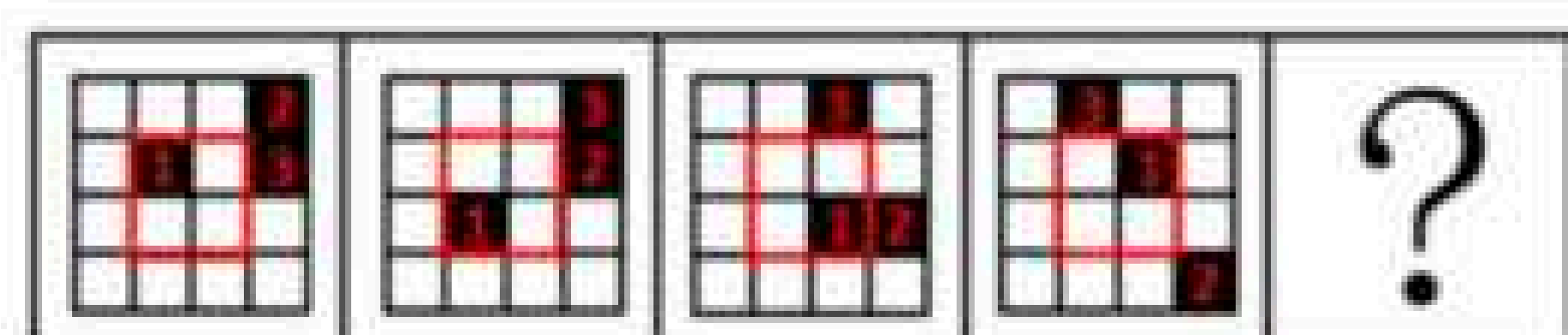
非宫格类：隐藏内外



思维：就近原则

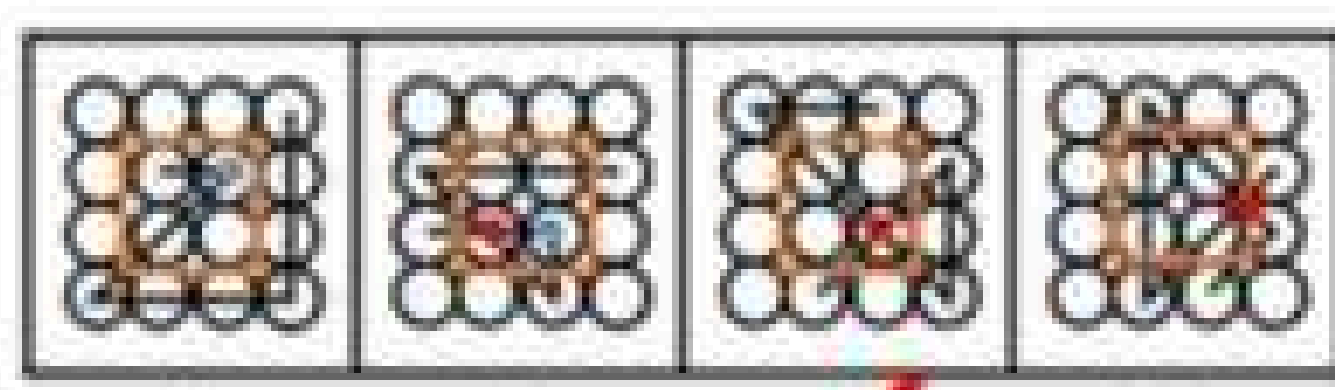
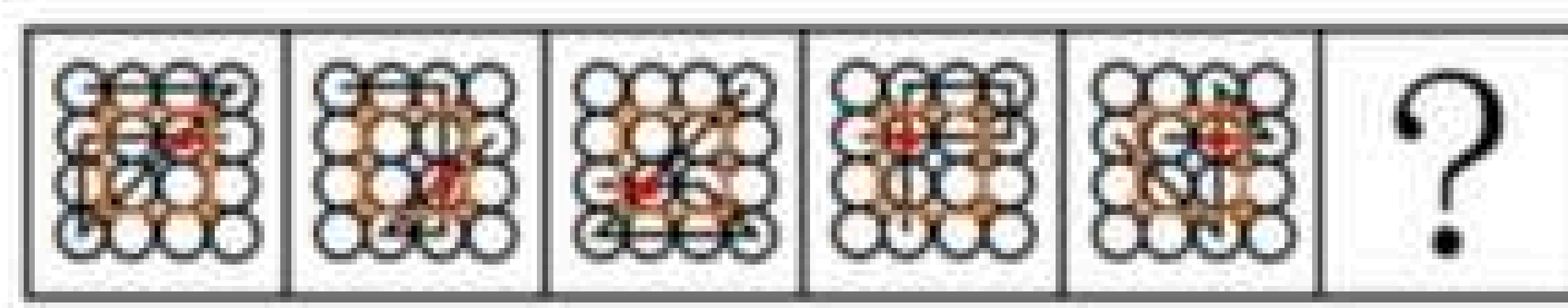
思维：隐藏线条（找特殊）

16宫格：内部相等



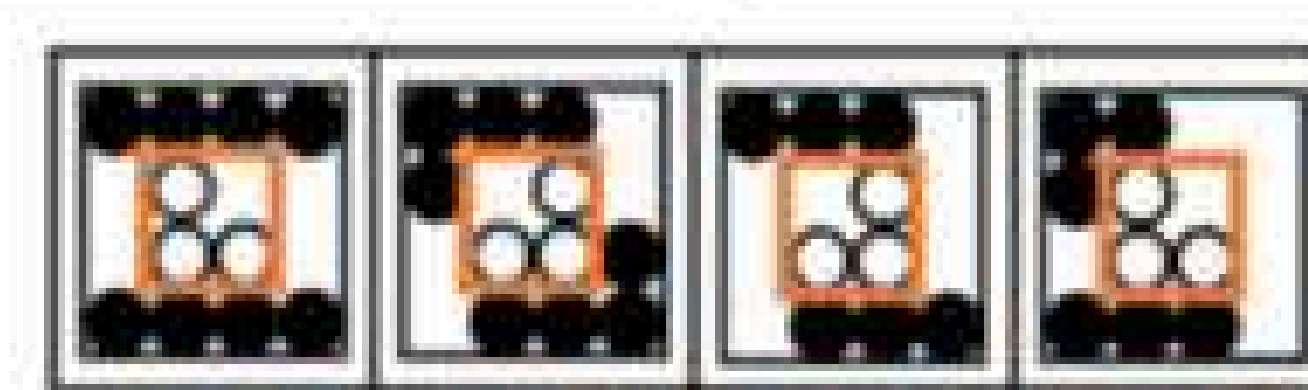
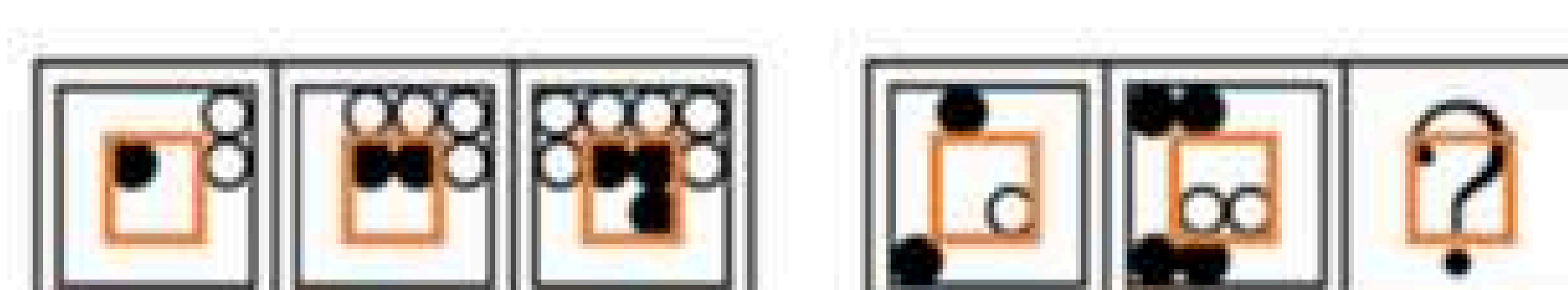
思维：内外分开看

16宫格：内部相等



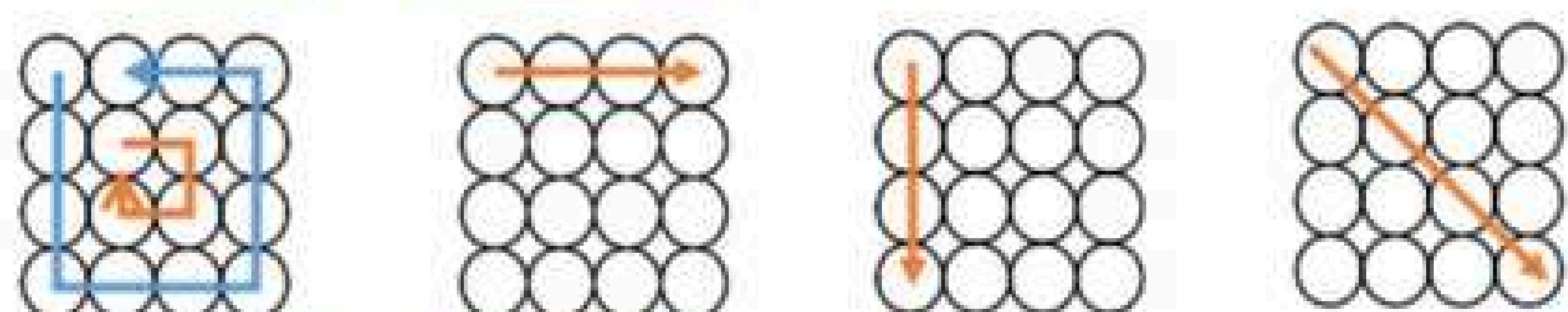
思维：内外分开 → 内部交点

16宫格：内部递增

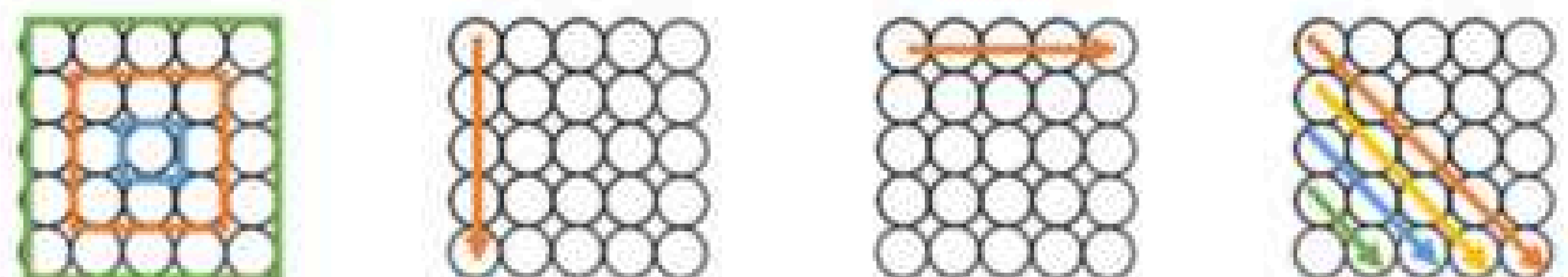


思维：内外分开 → 内部有规律

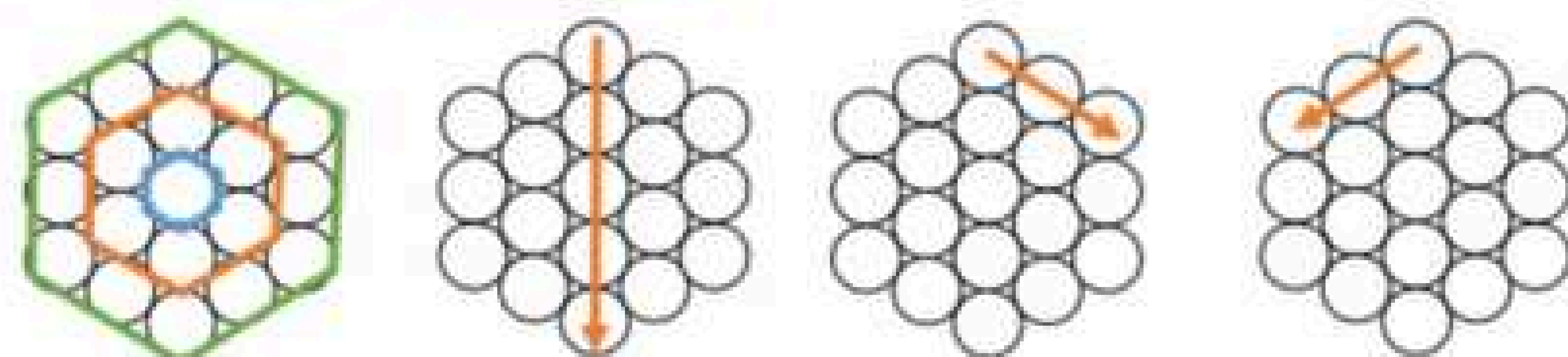
16宫格：运动方向



25宫格：运动方向

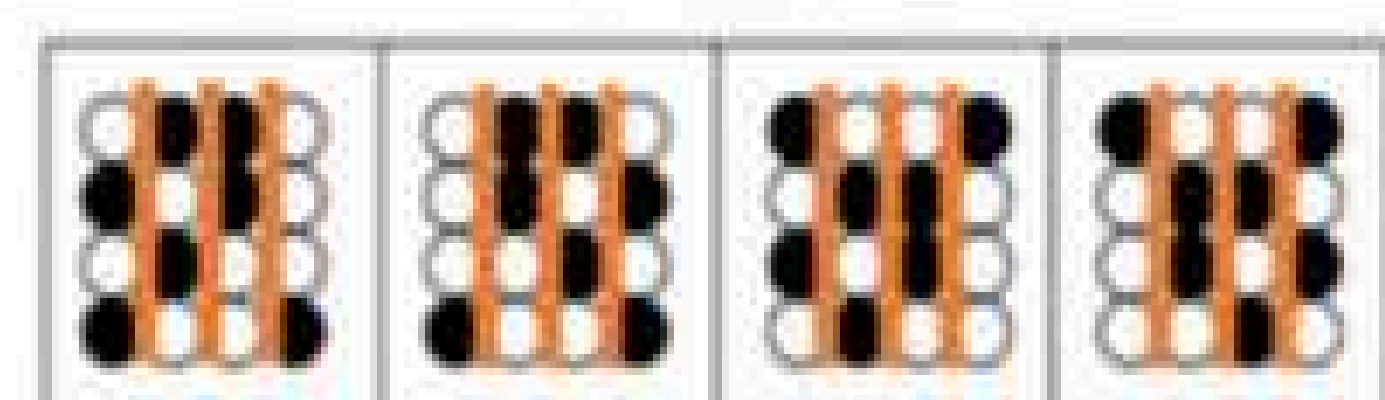
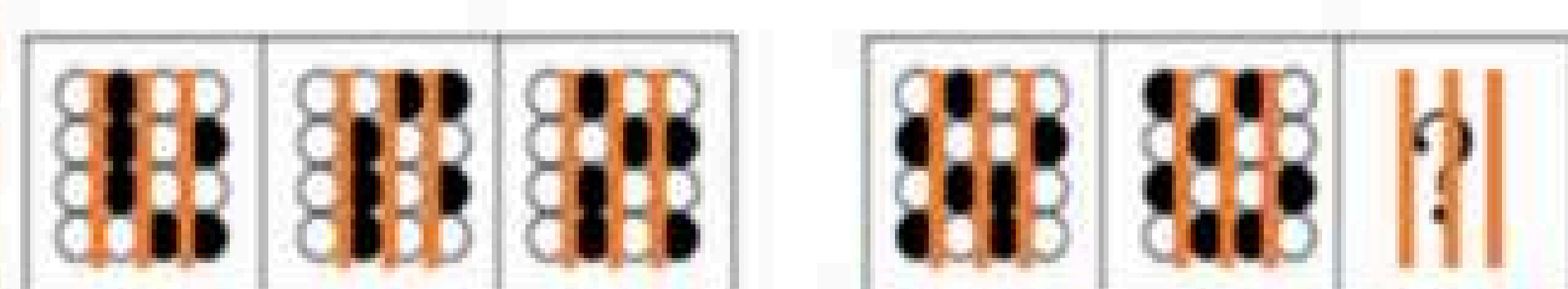


蜂窝类：运动方向



主流宫格类型

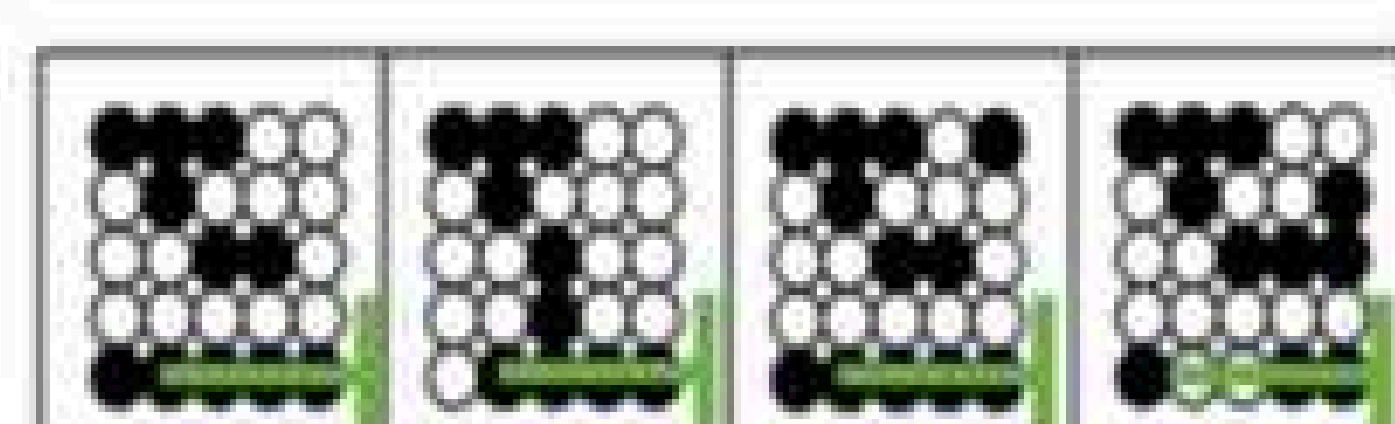
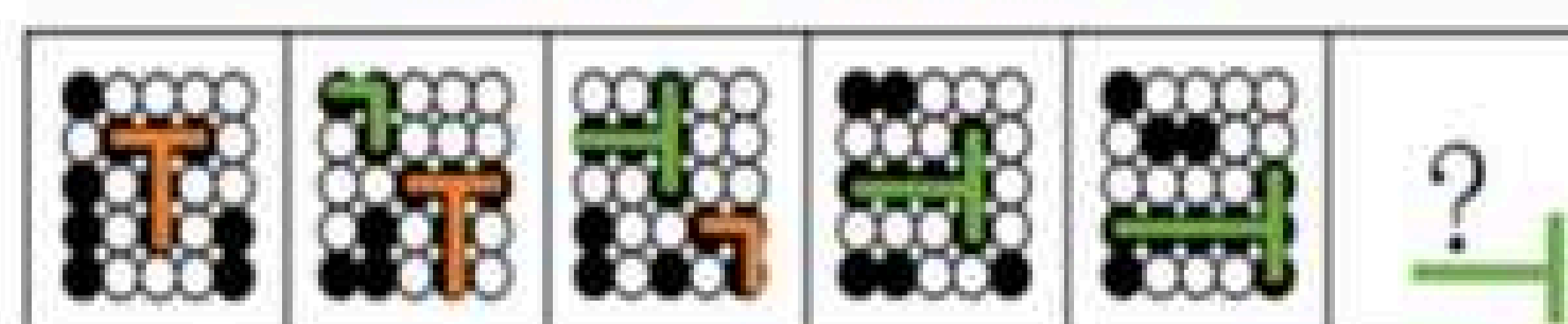
16宫格：运动方向



思维：个数定方向

思维：循环走

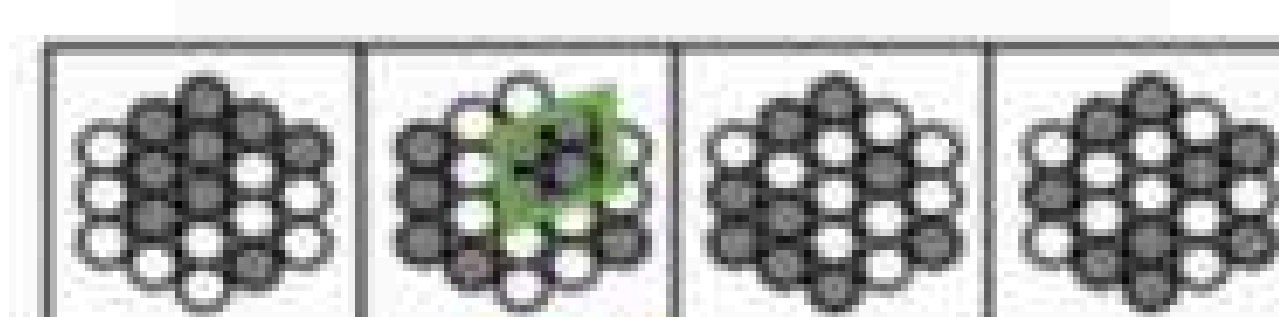
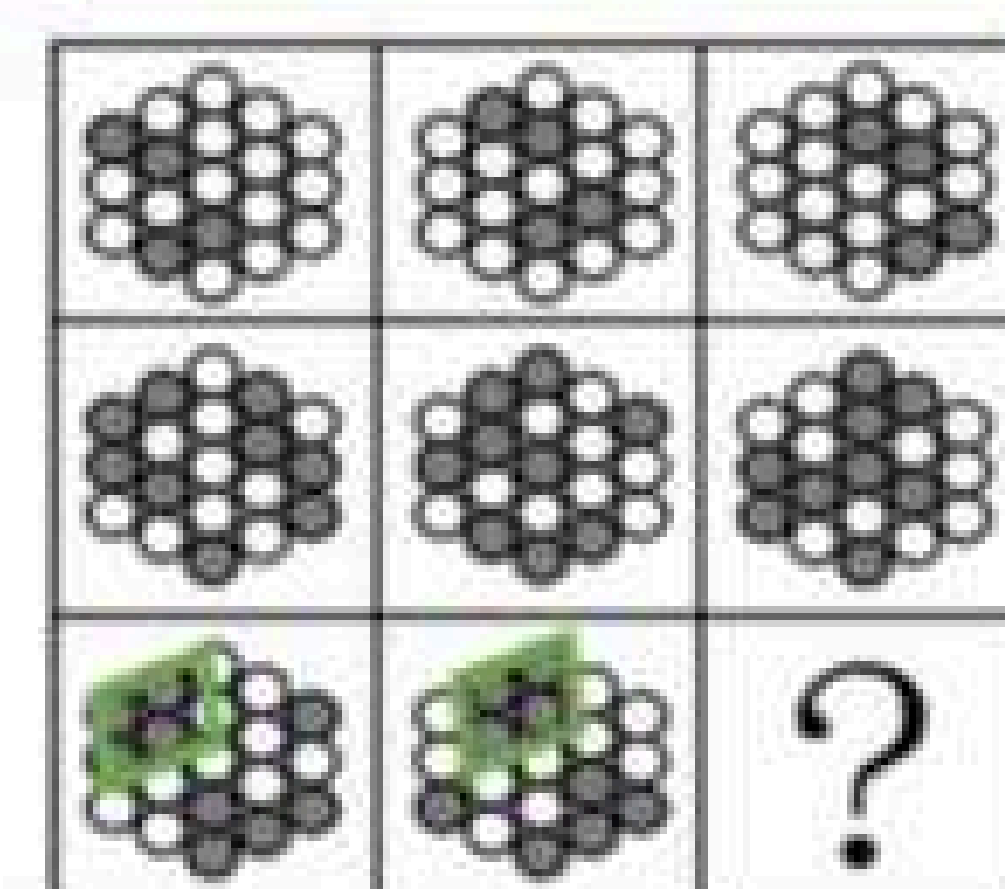
25宫格：运动方向



思维：斜着运动（大面积、个数）

思维：特殊图案（大区域）

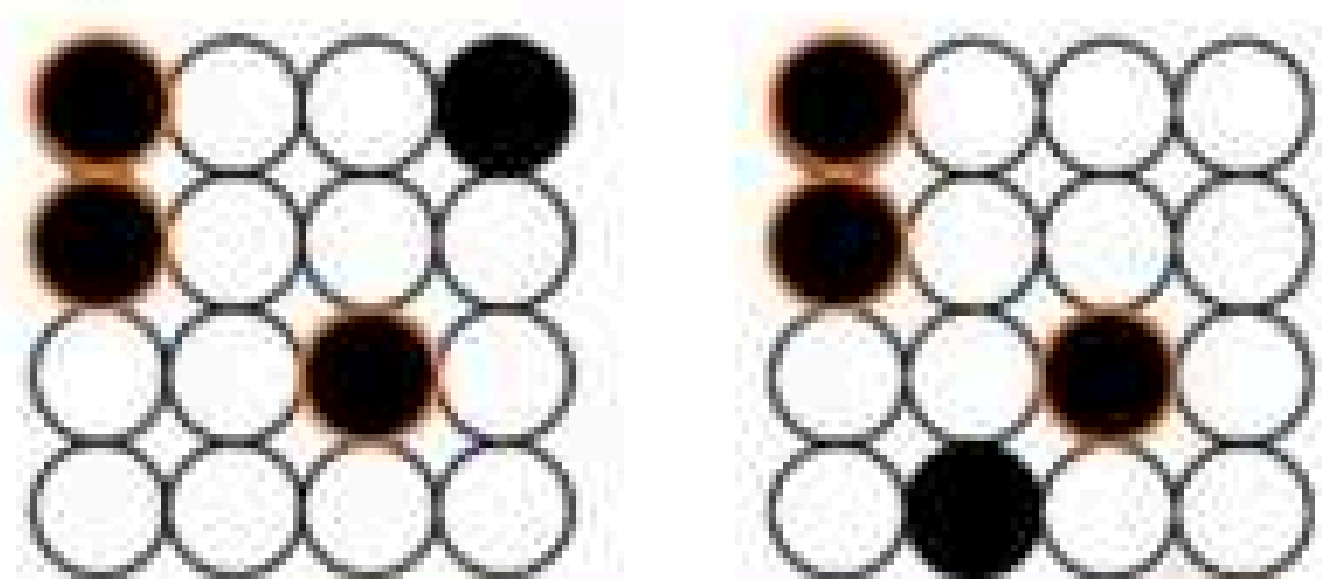
蜂窝类：运动方向



思维：方向可变

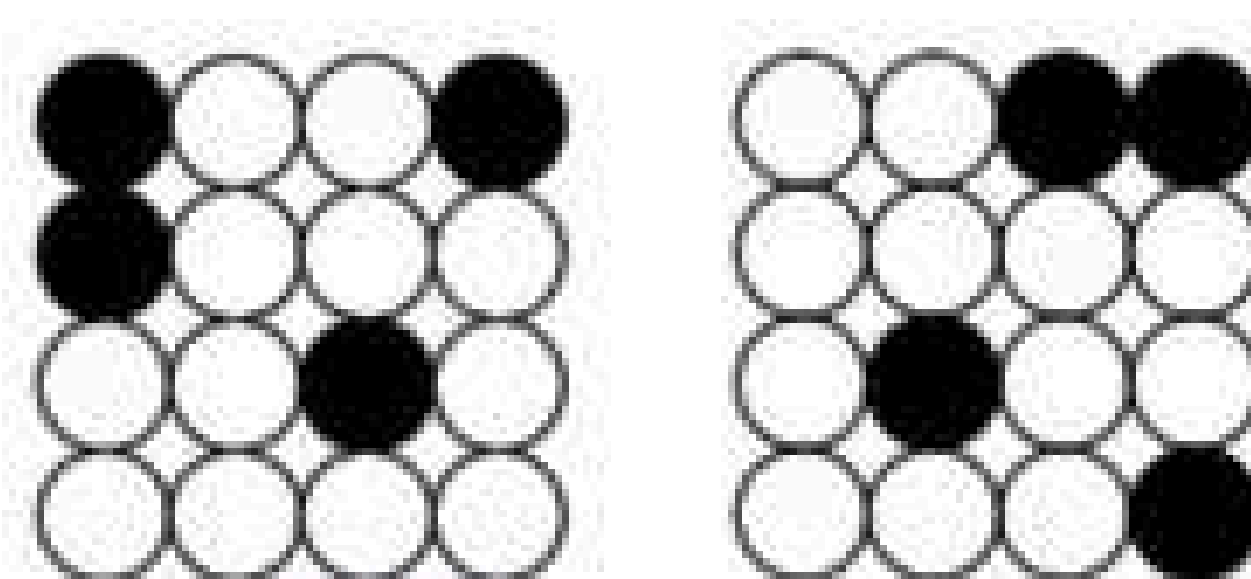
2. 相邻比较

作图特点



相邻比较：有不动

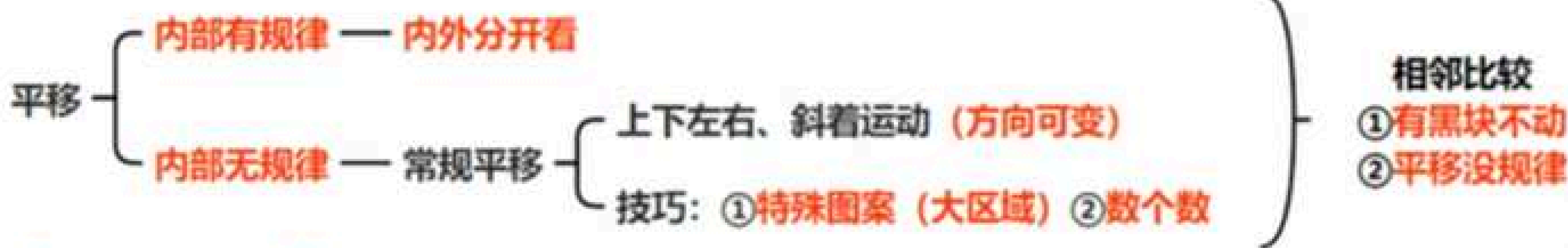
①有黑块不动(像)



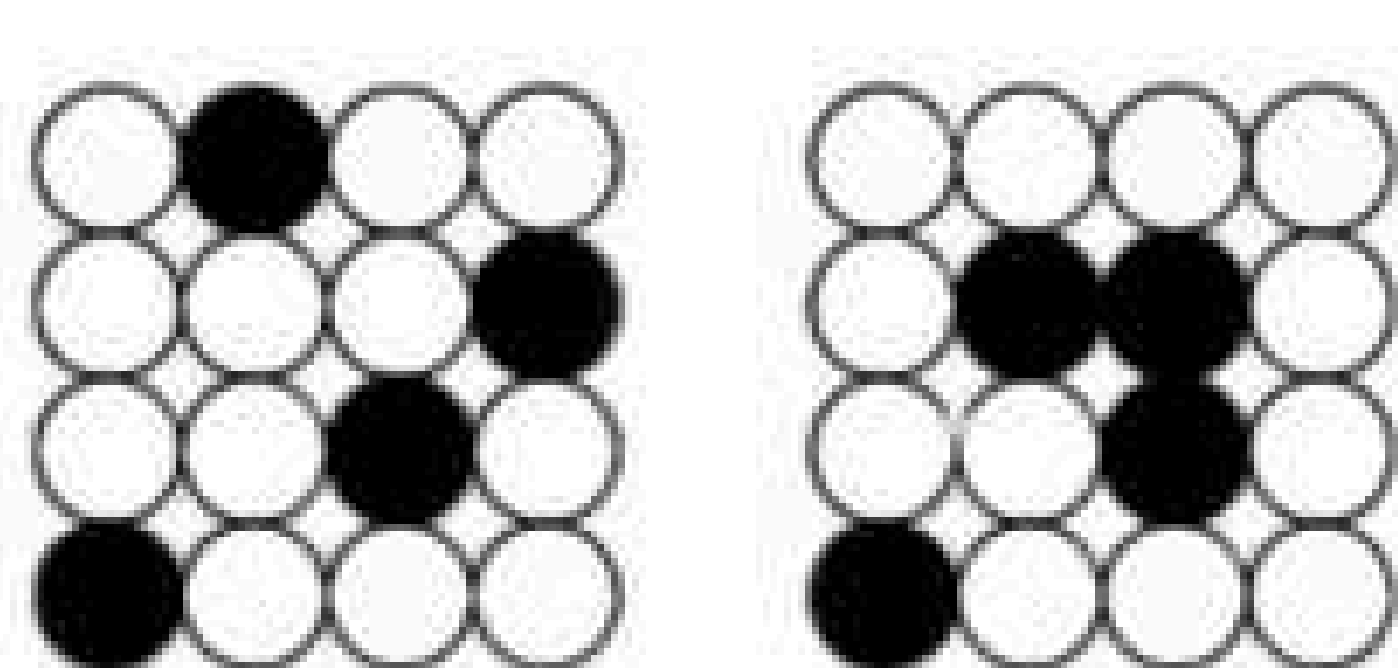
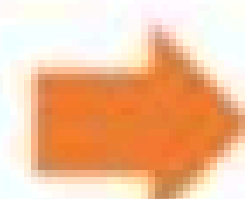
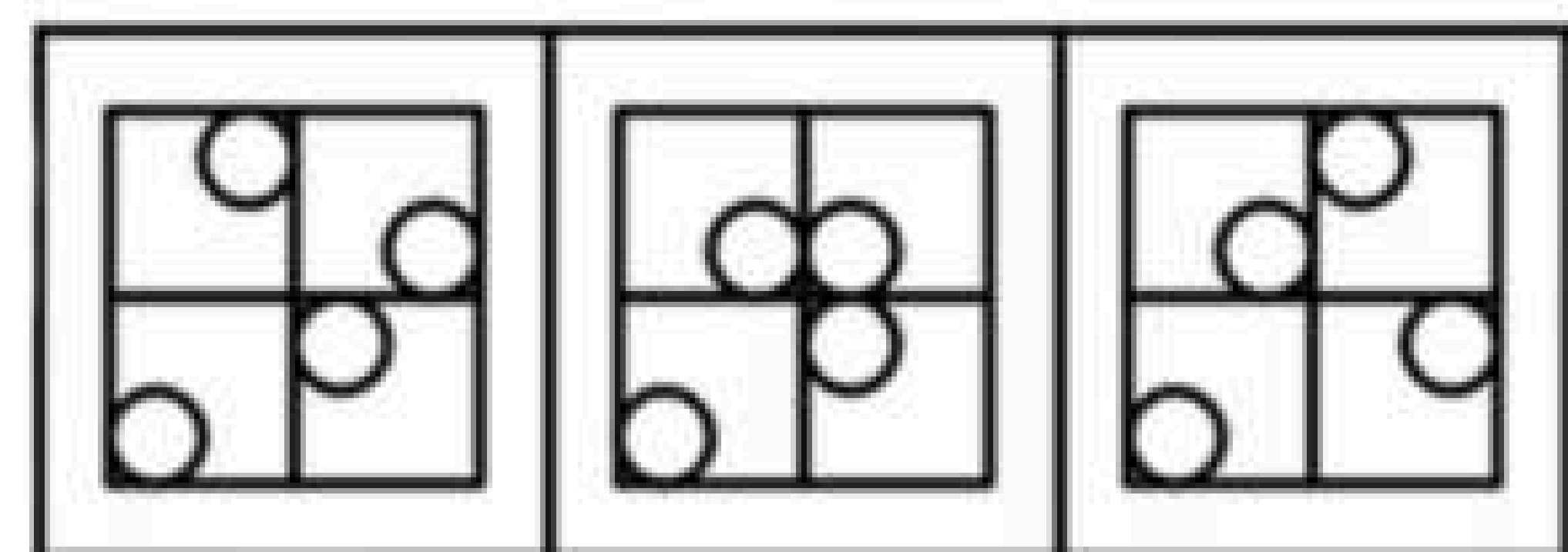
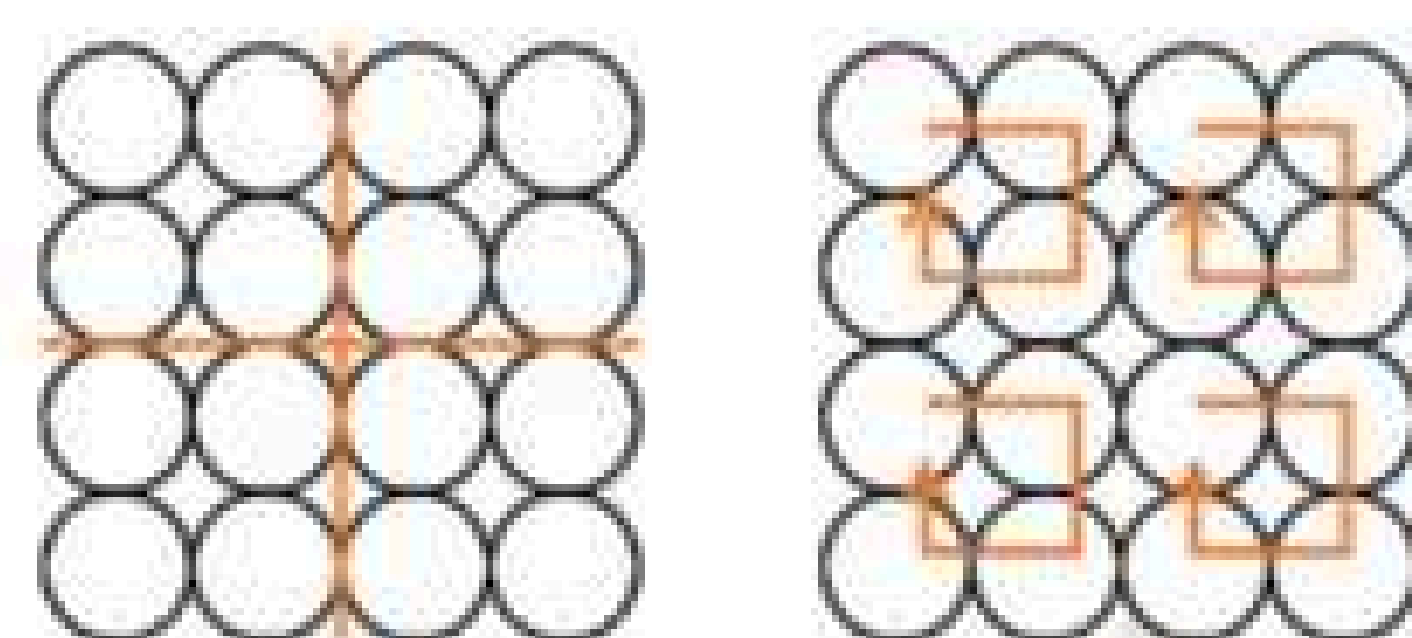
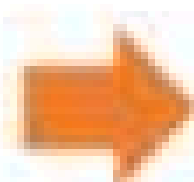
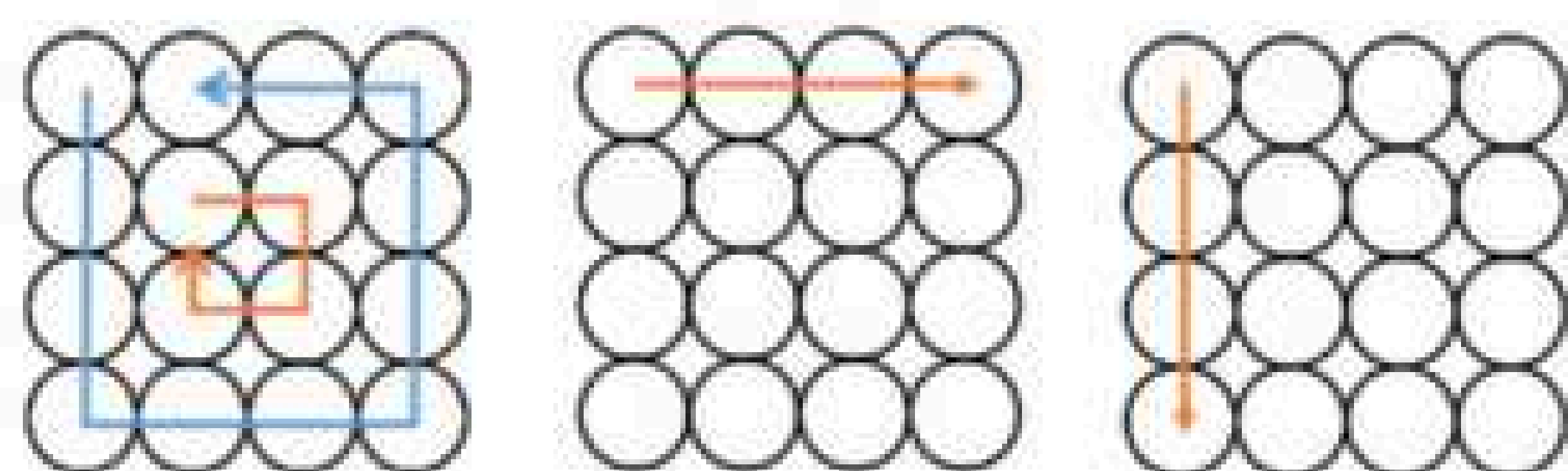
位置规律：都在动

②位置没规律

实战思维



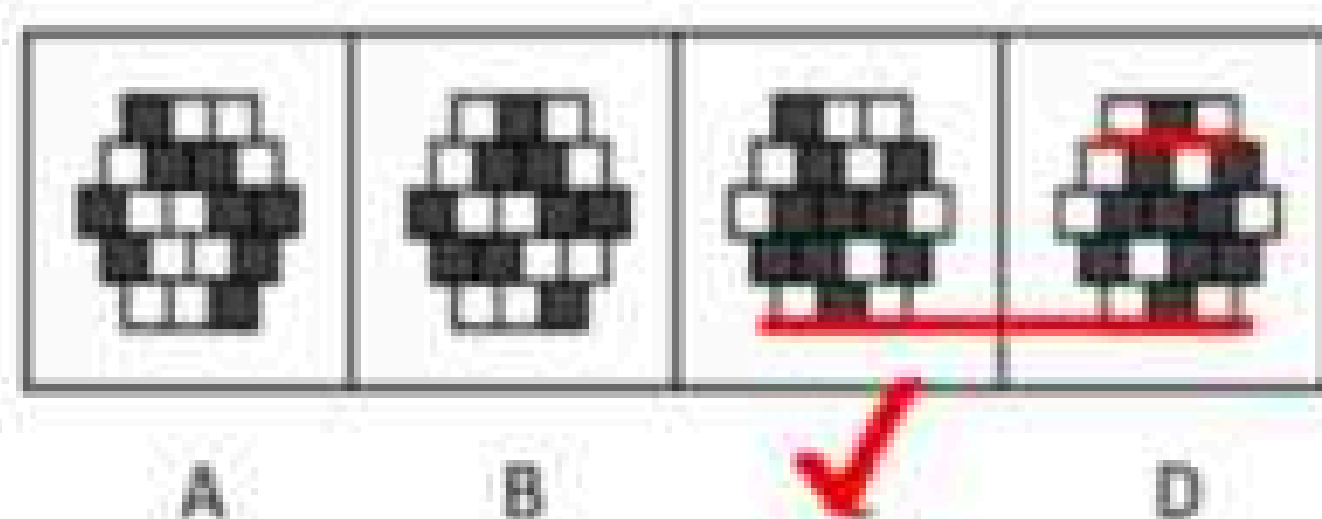
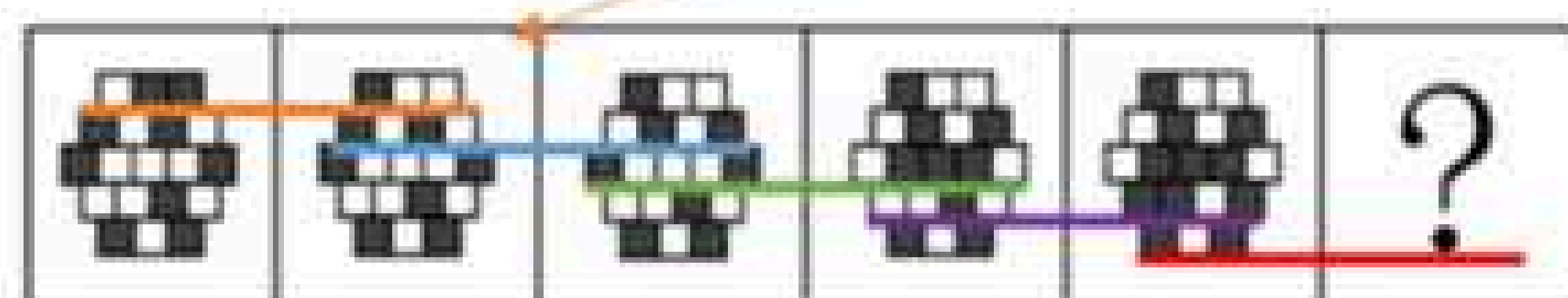
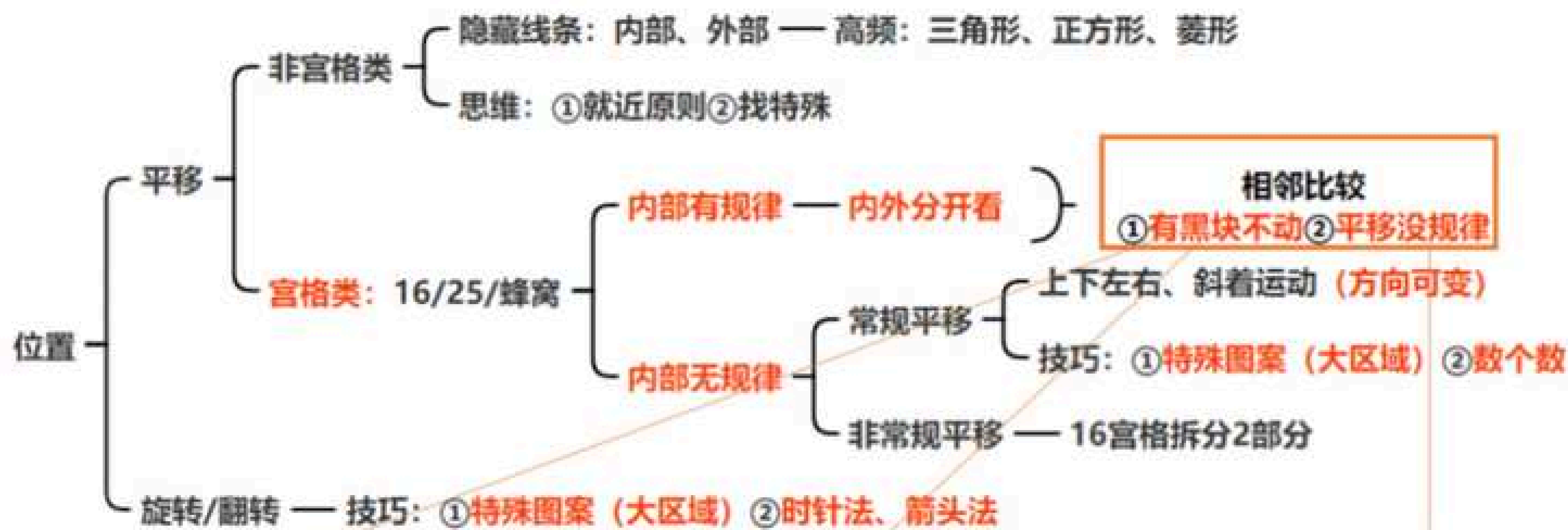
破解出题者“小心思”：



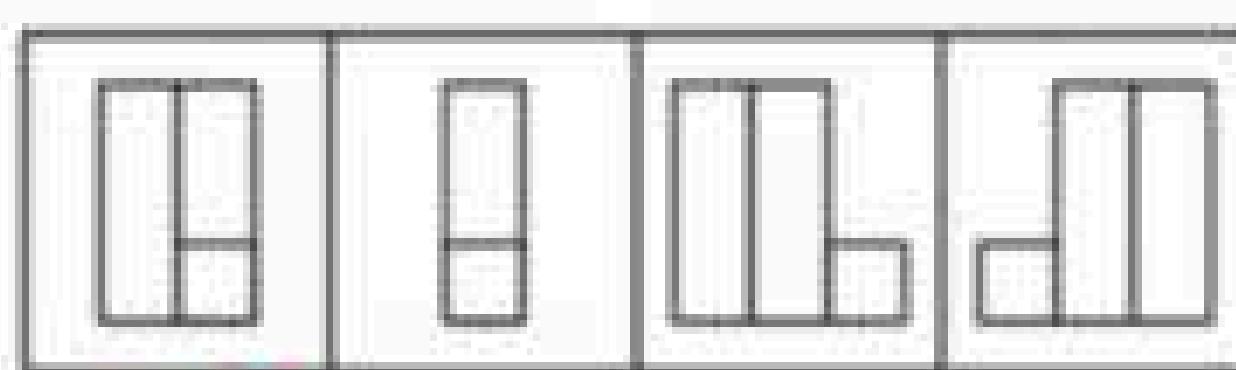
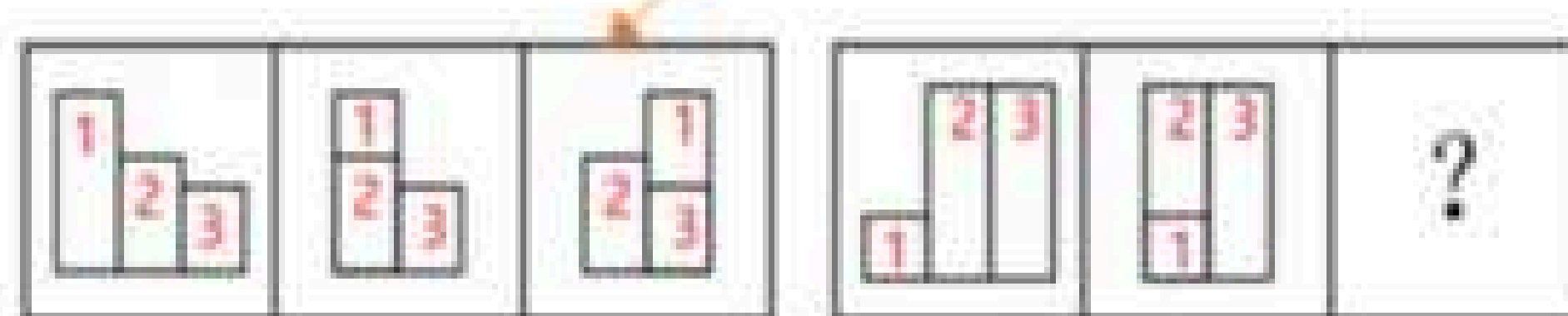
➤ 思维：平移没规律

➤ 思维：有图案不动 (像)

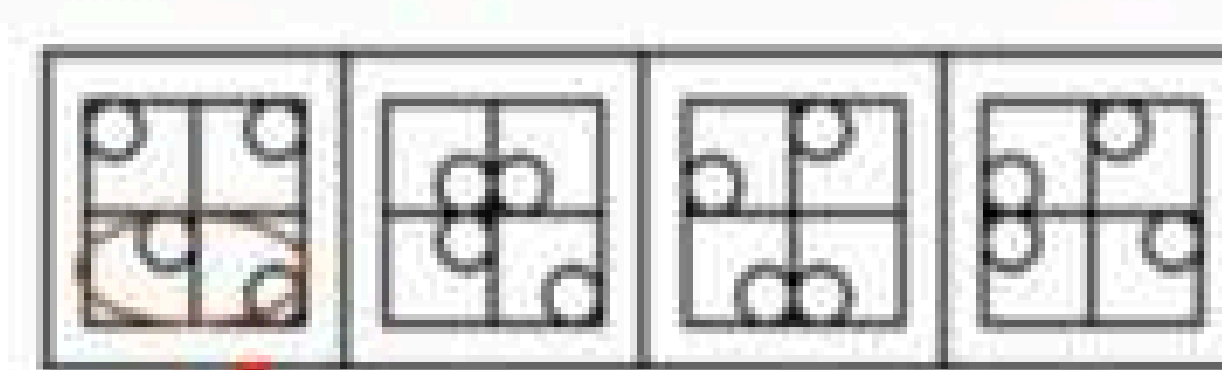
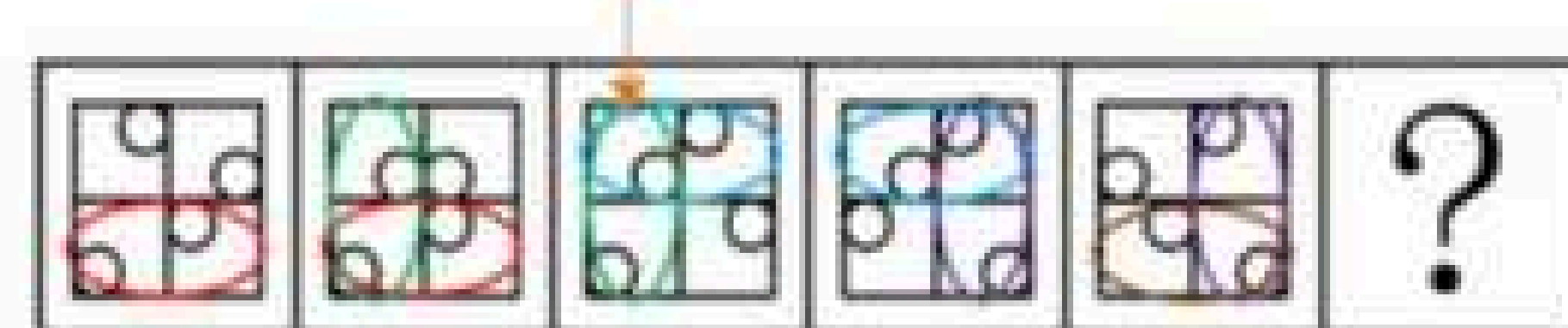
刘义恒图推-相邻比较-串讲



➤ 黑块-相邻比较



➤ 矩形-相邻比较



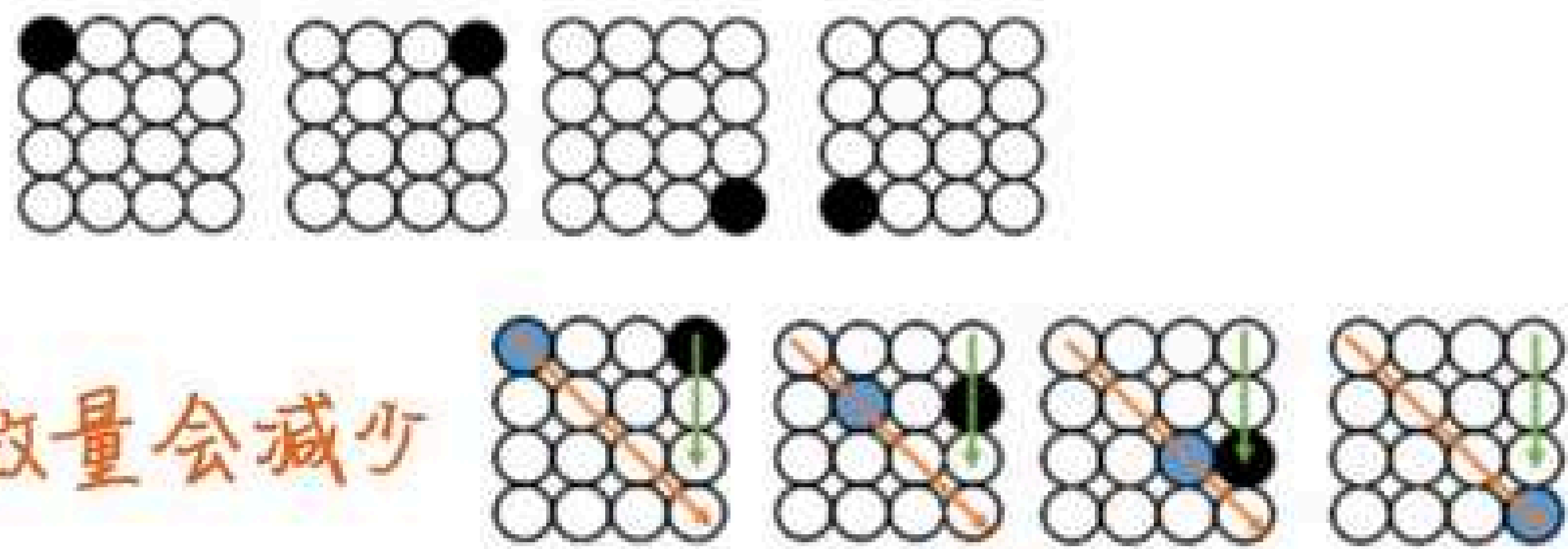
➤ 小球-相邻比较

3. 旋转、翻转

作图特点

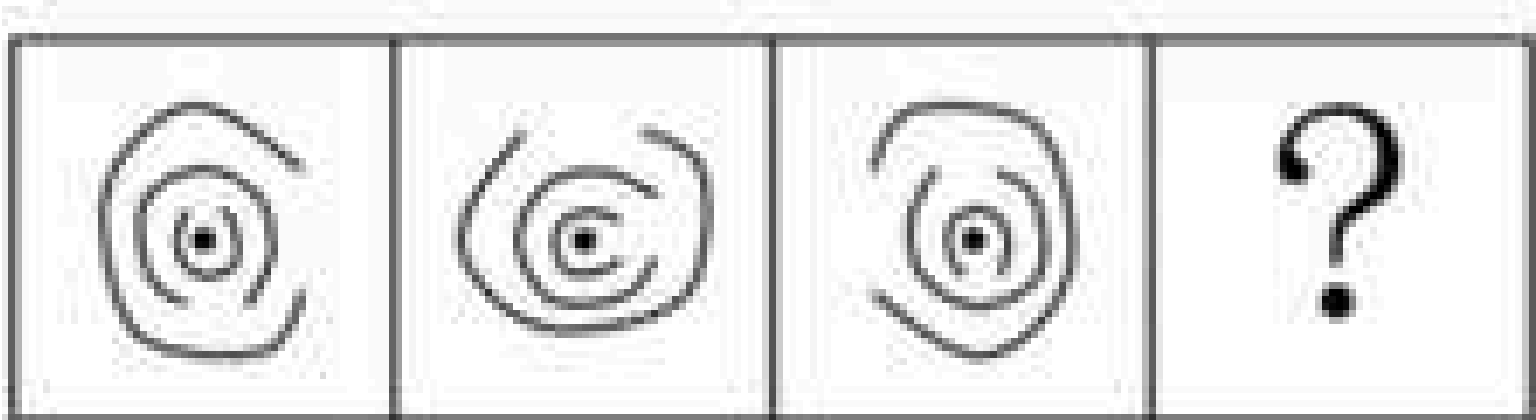
每幅图图案相同

在重合情况下,图案数量会减少



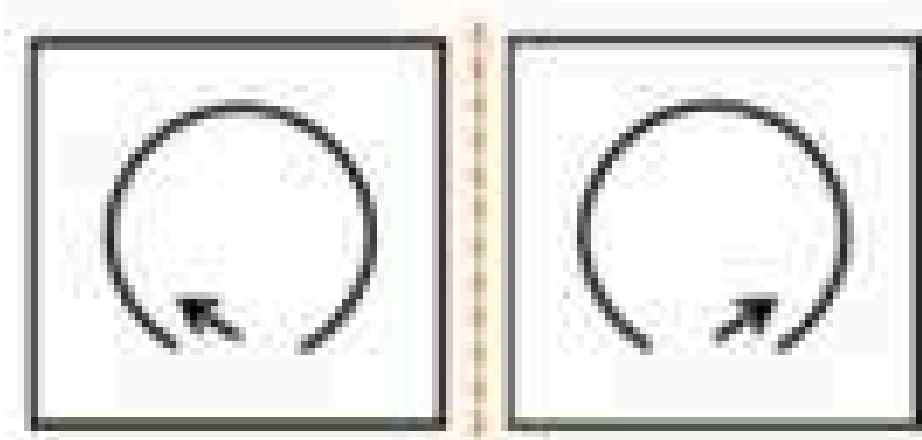
◆ 旋转

方向 ①顺时针 ② 逆时针



步数(角度) 30° 45° 60° 90° 180° (高频)

◆ 翻转



(1)左右翻转:竖轴对称

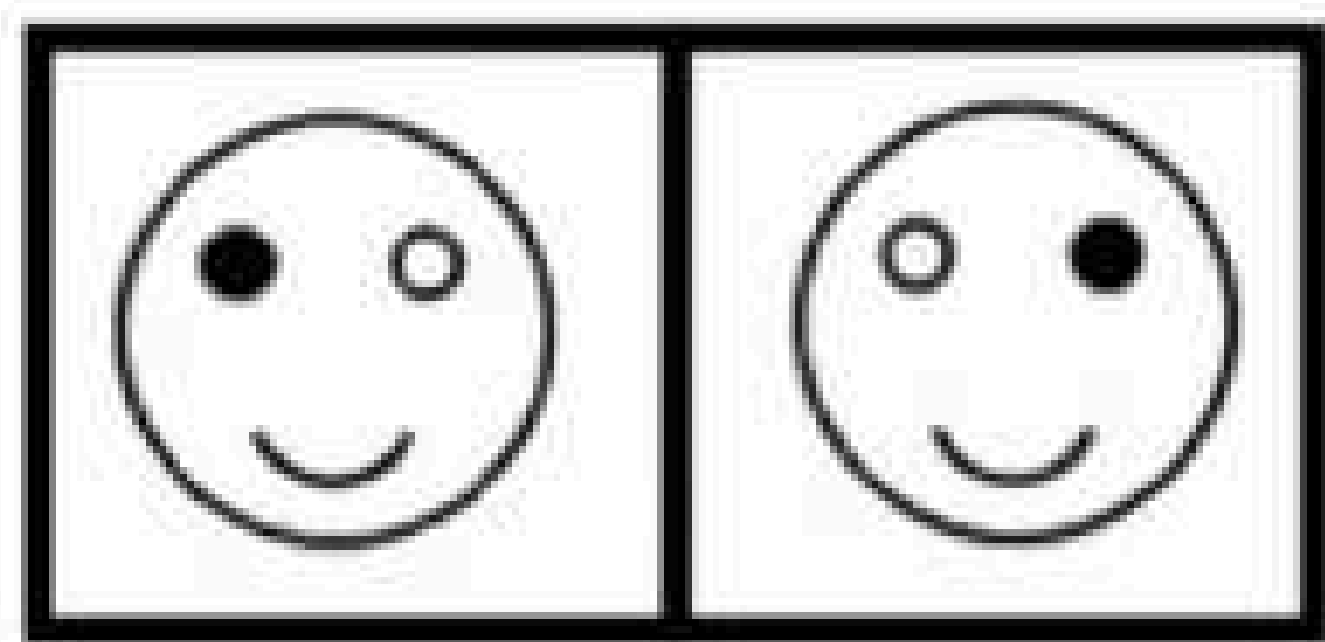


(2)上下翻转:横轴对称

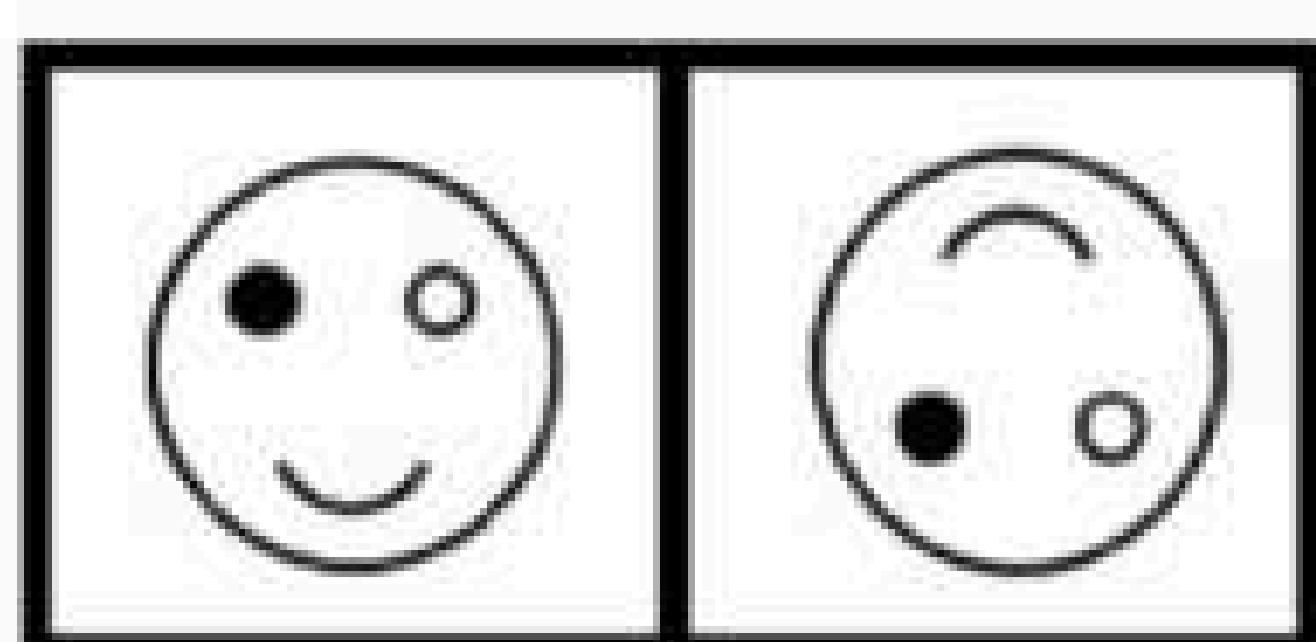


来源于小红书@贝栗子

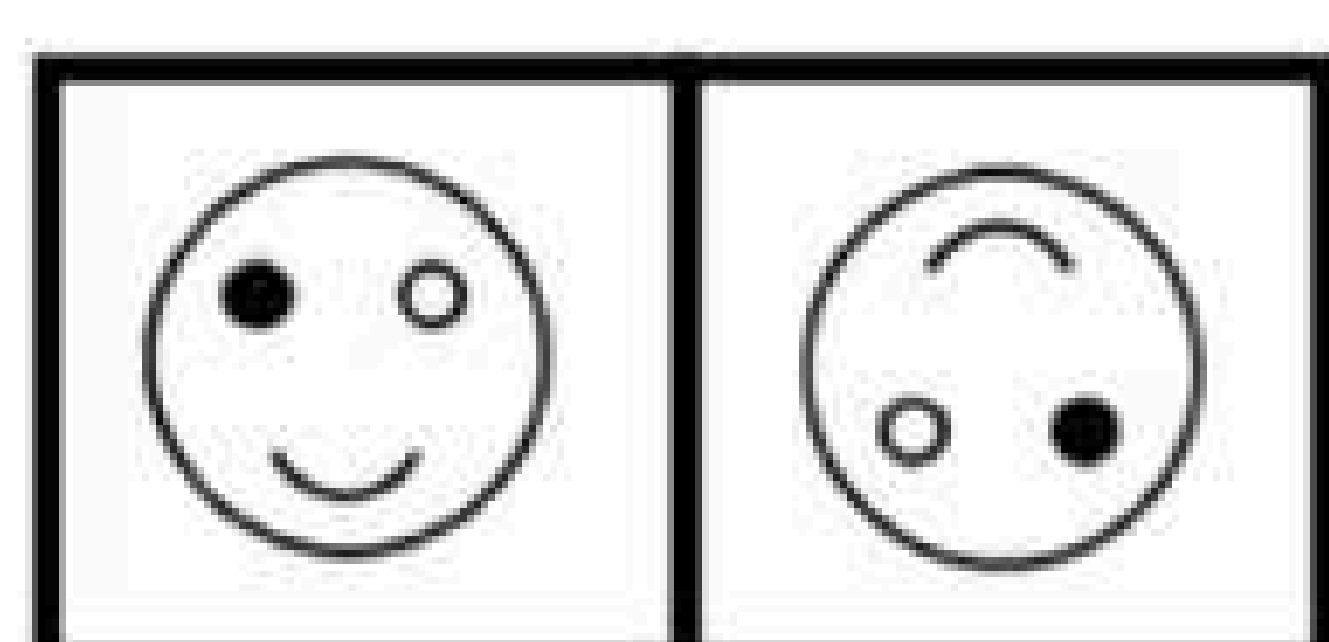
◆ 如何区分旋转、翻转?



左右翻转: 只变左右



上下翻转: 只变上下

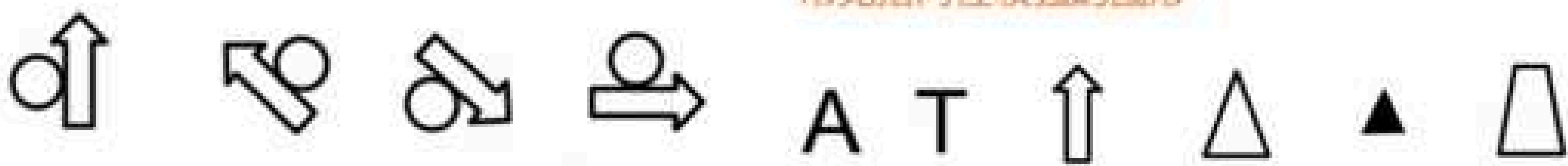


180°旋转: 上、下、左、右 都变
怎么变, 怎么翻, 全变就是180°

技巧

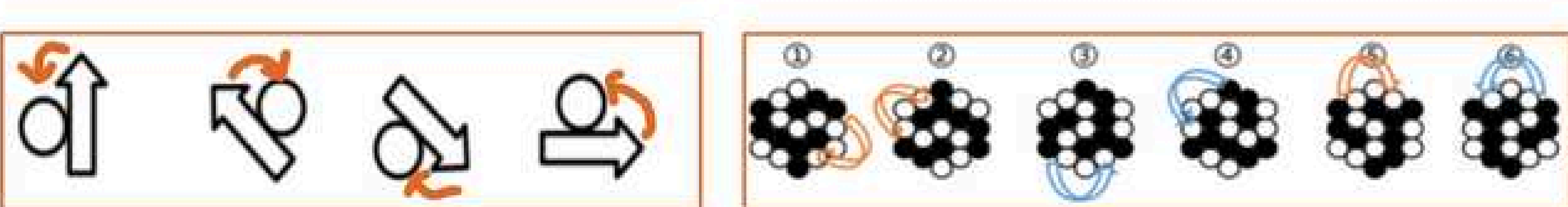
常见指向性较强的图形

①箭头法(找唯一,定方向)

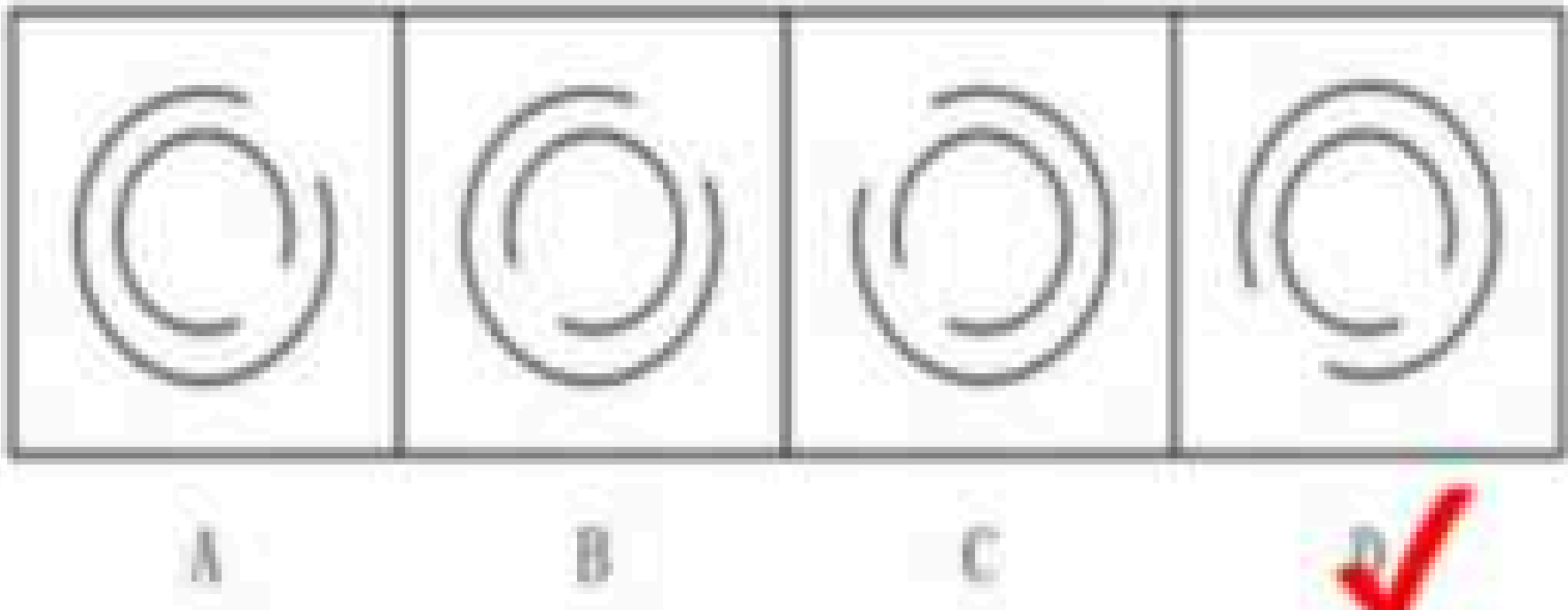
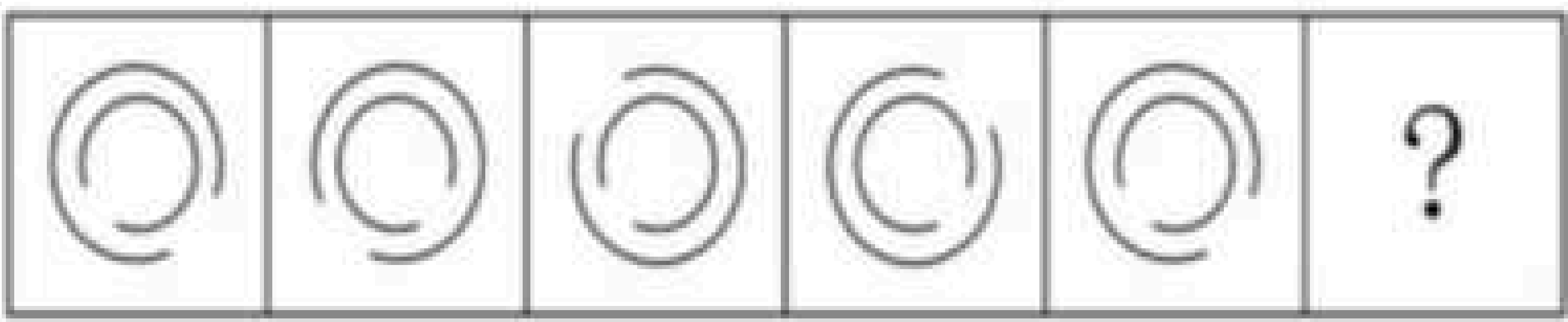
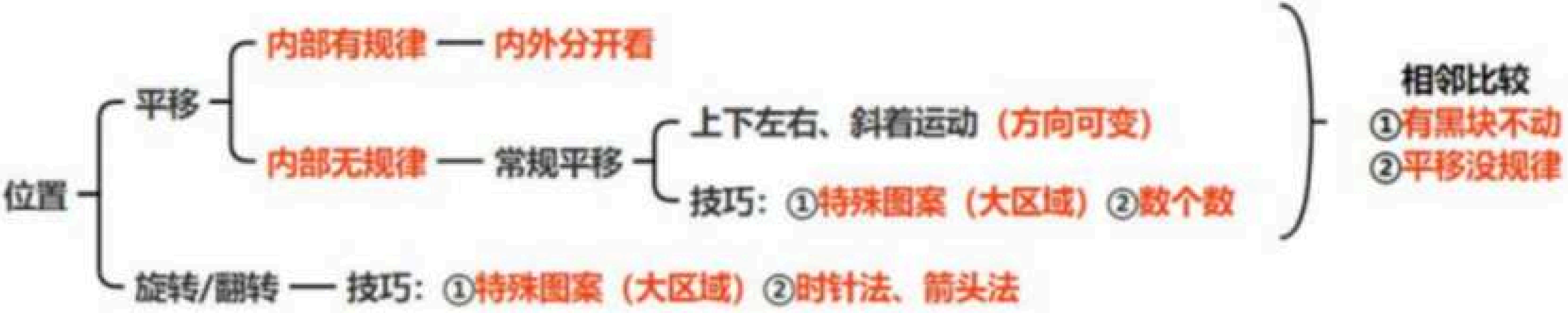


“三个同一”: 同一起点, 同一路径, 同一终点

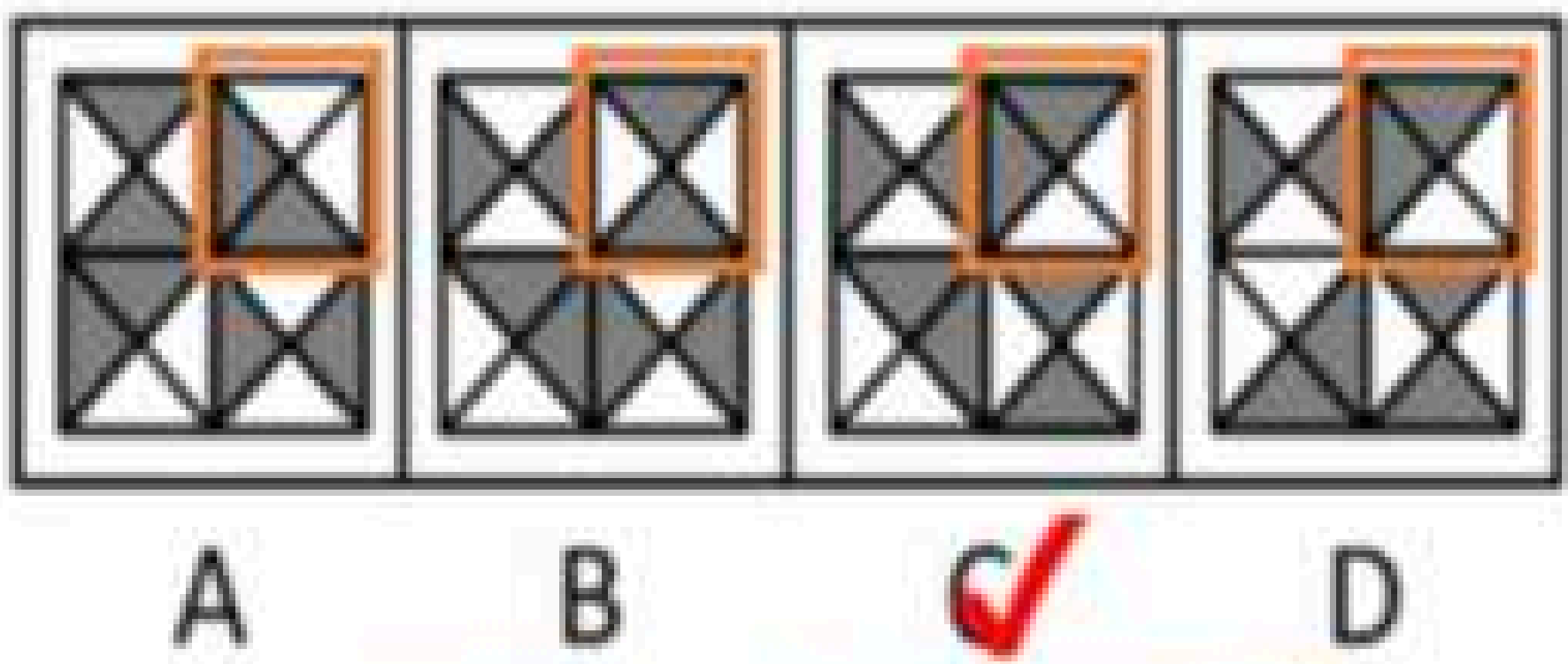
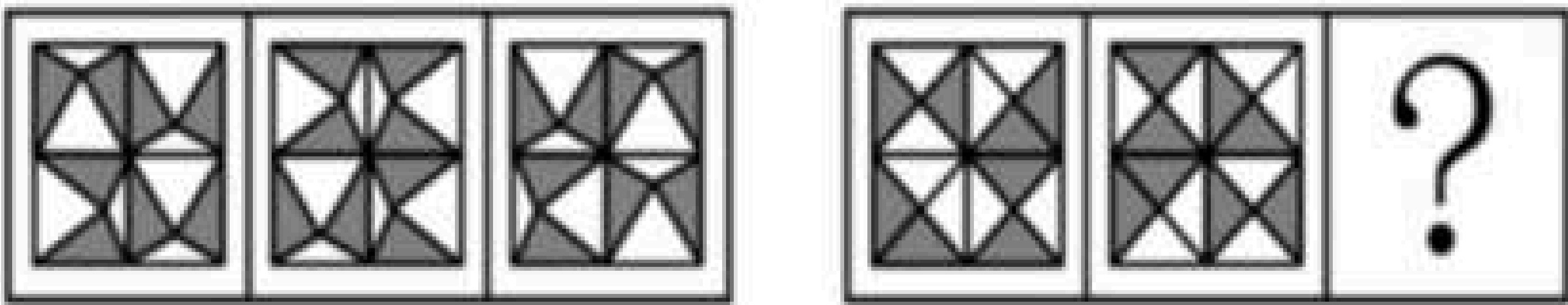
②时针法



位置规律--旋转翻转小结

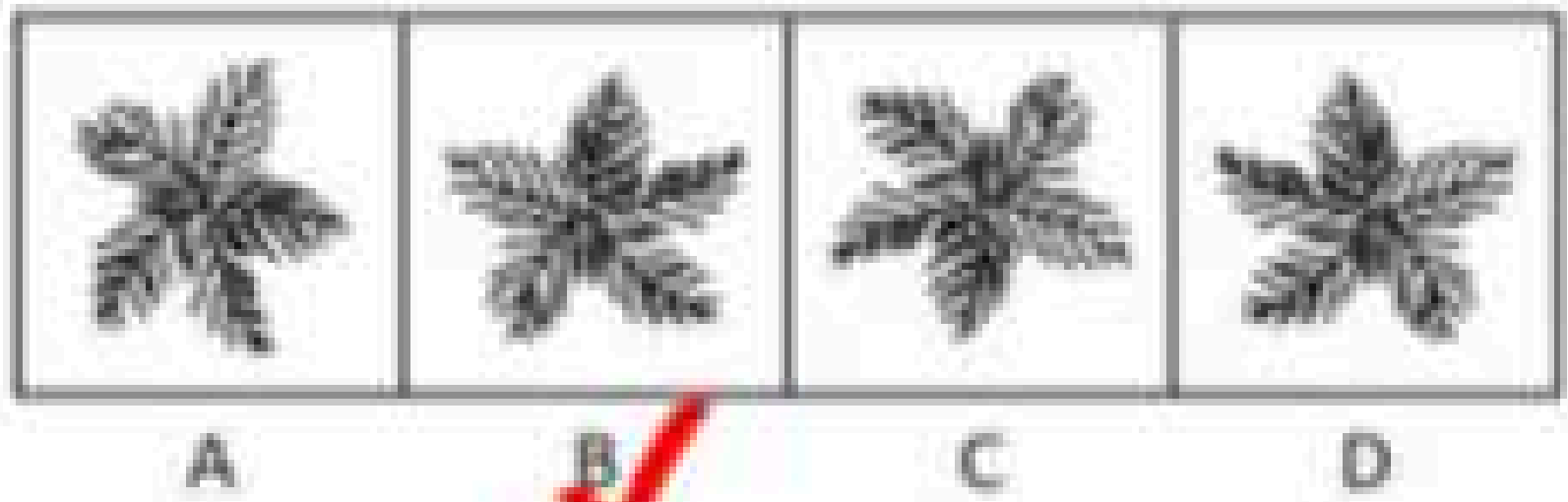
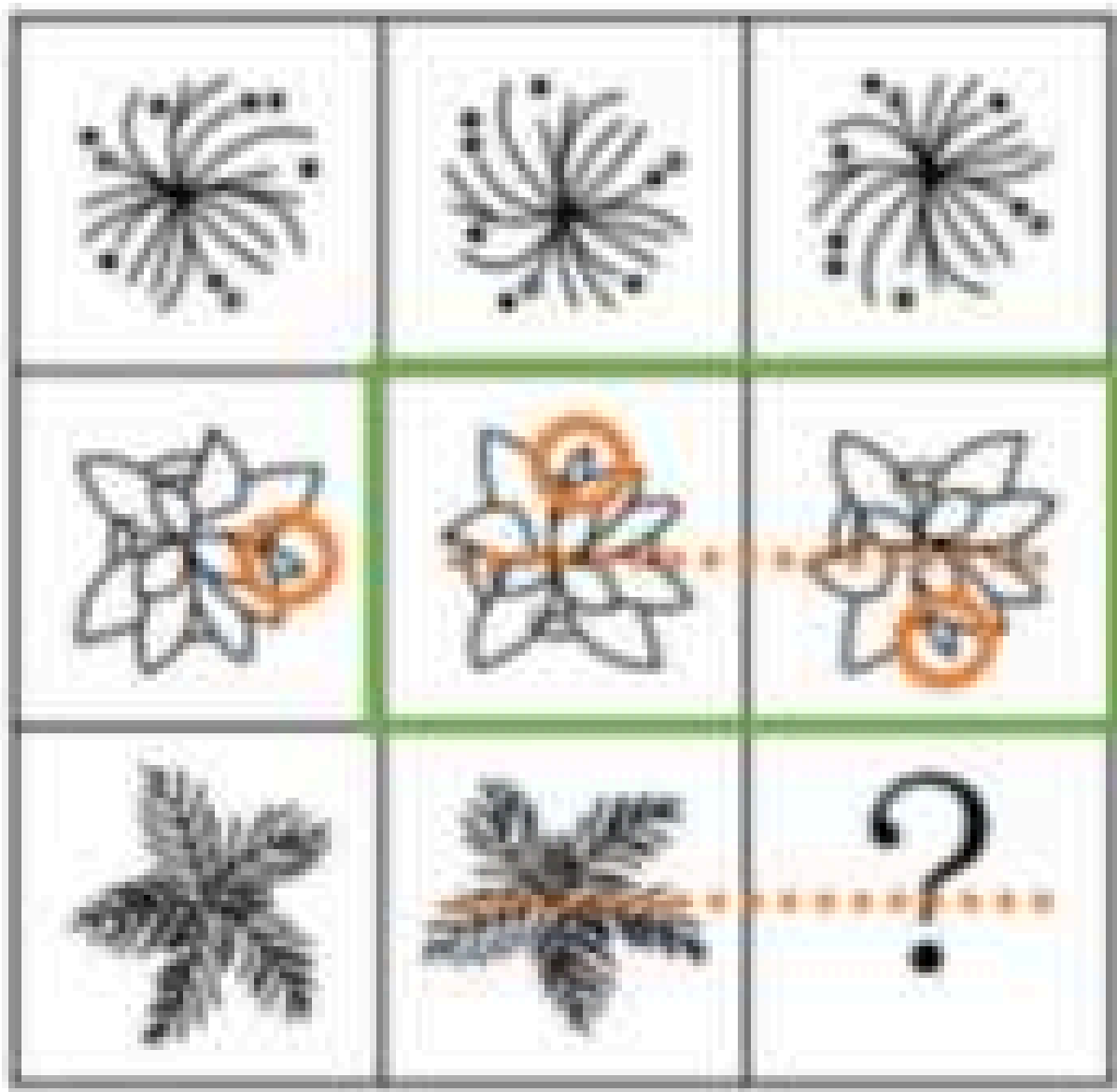


➤ 思维：旋转、翻转

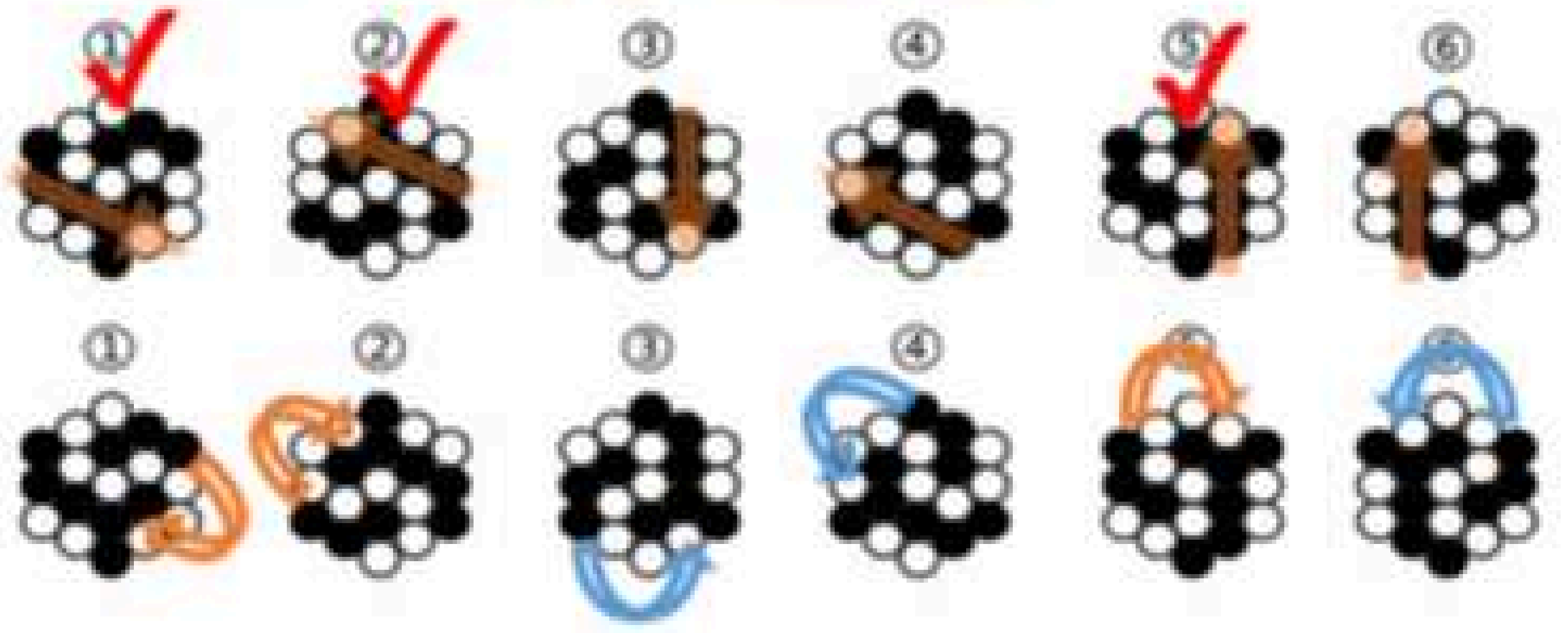


➤ 思维：对比选项

➤ 思维：图案一样+分组分类题型-
不考位置规律-旋转翻转



➤ 思维：特殊图案



➤ 思维：时针法、箭头法

➤ 思维：黑球不好看 → 看白色
➤ 其他题型不一定适用

【本节总结】

理论速记

- 【位置规律】①命题者作图特点：每幅图**图案完全一样**。
②特殊情况：图案移动过程，在**重合**情况下，图案数量会减少。
③考点：1.**平移**2.**旋转、翻转**

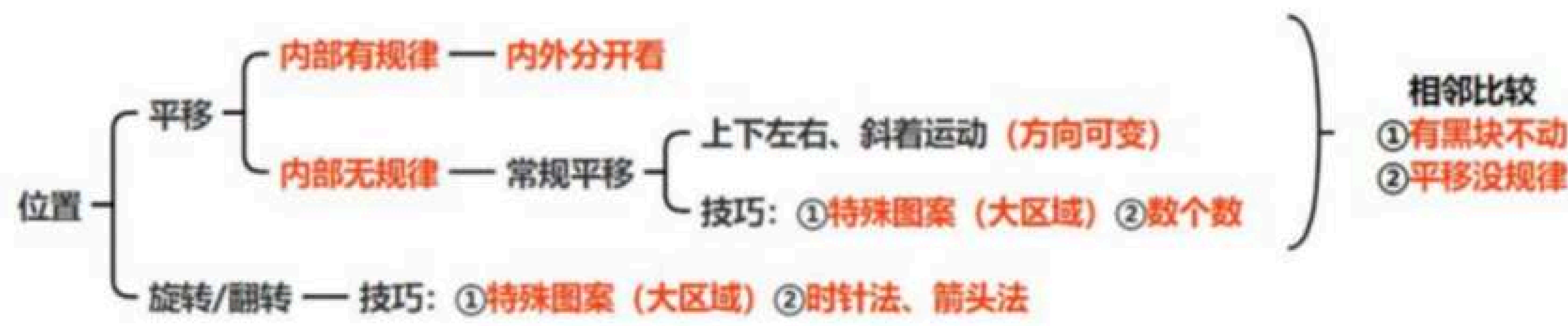
- 【平移】①确定“平移”后，第一步先观察**内部**是否有规律。
②**内部有规律**，考虑**内外分开看**。运动方向：**绕圈（顺/逆时针）**
③**内部无规律**，考虑**常规平移**。运动方向：**直线（上下、左右、斜对角线）**，且方向**可变**。
（一）“定方向”技巧：1.**大面积图案**2.**数个数**
（二）“走到头”后：1.**循环走**2.**反弹走**
④运动步数：**恒定、递增**为主。

- 【旋转、翻转】①旋转：
1. 方向：**顺时针、逆时针**
2. 角度：**30°、45°、60°、90°、180°**等常见角度
②翻转：
1. 左右翻转：图形沿**竖轴**对称
2. 上下翻转：图形沿**横轴**对称
③技巧：1.**特殊图案（大区域）** 2.**时针法、箭头法**

【相邻比较】命题者作图特点：1.**有黑块不动**2.**平移没规律**

➤ 理论速记

实战思维





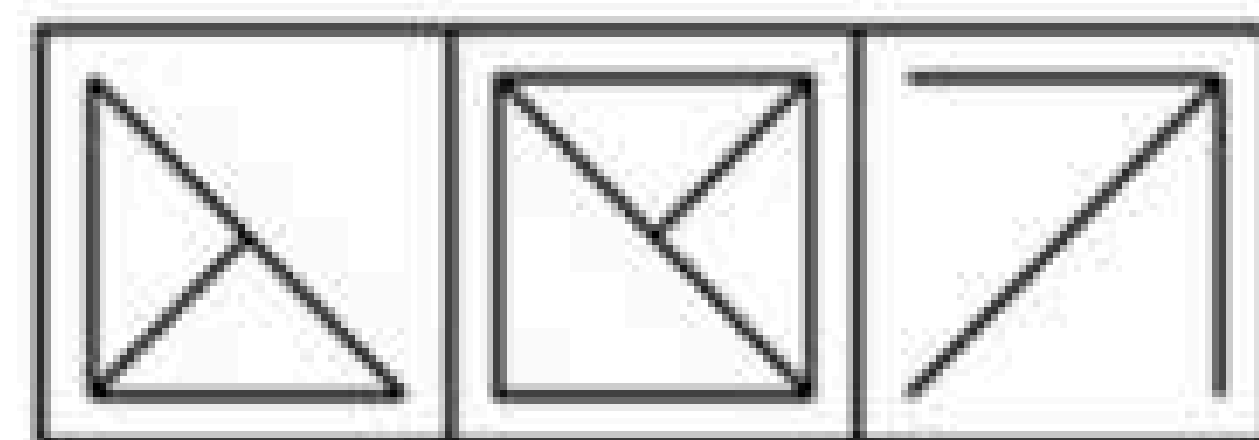
第二节：样式规律

1. 加减同异

1. 加减同异

作图特点

图案部分一样(线条居多),且位置对应



解题思路

先看图1图2相同线条

有相同, 先运算 — 可能图3动

无相同, 先旋转

13一样 — 图2动

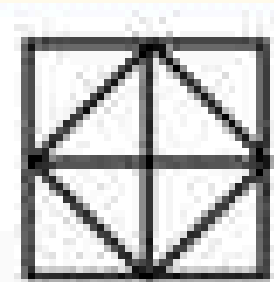
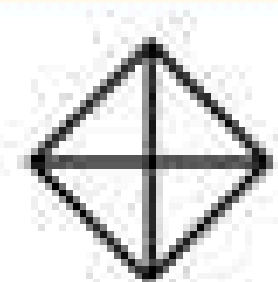
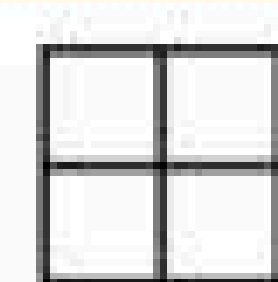
23一样 — 图1动

考法

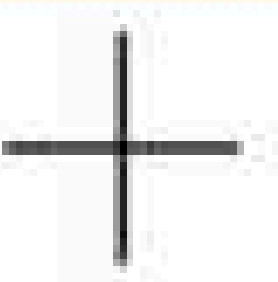
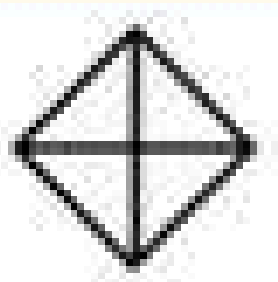
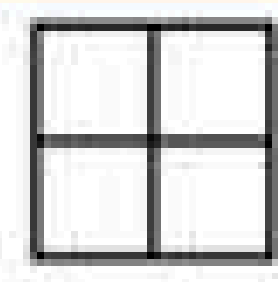
相加, 相减, 求同, 求异

出题形式: 两组图, 九宫格

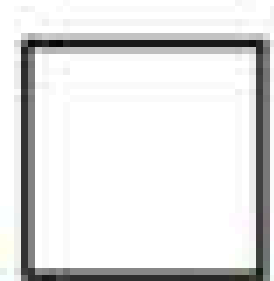
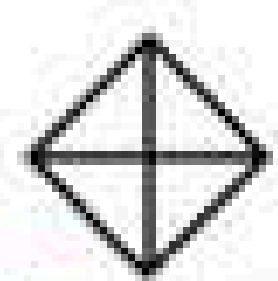
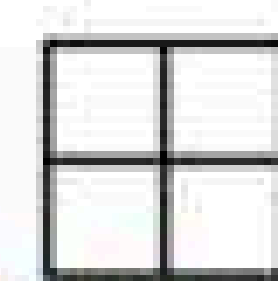
①相加



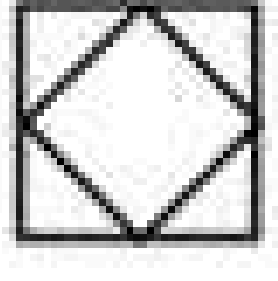
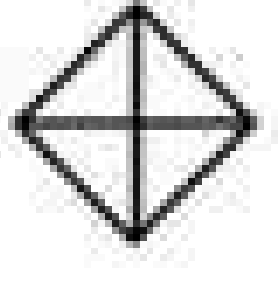
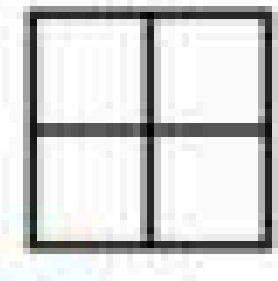
③求同



②相减



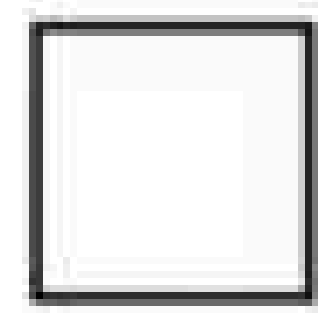
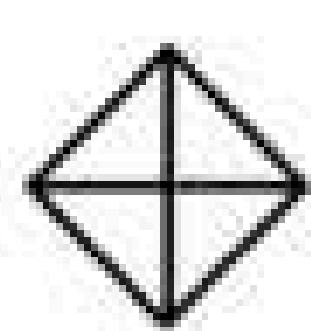
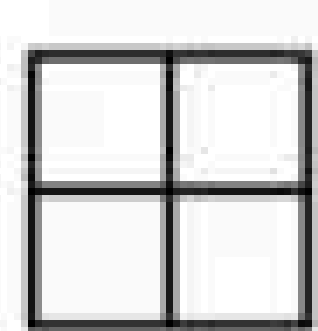
④求异



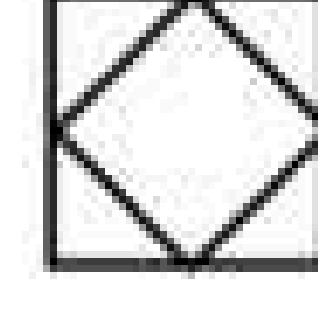
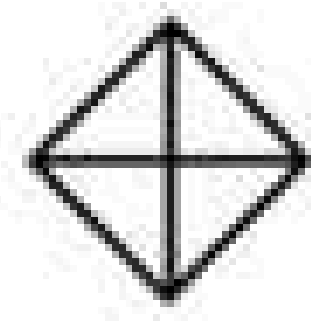
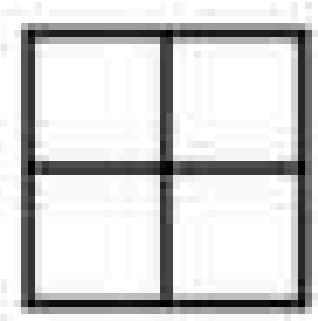
高频: 图1和图2, 运算得到图3

● 求异和相减

相减



求异

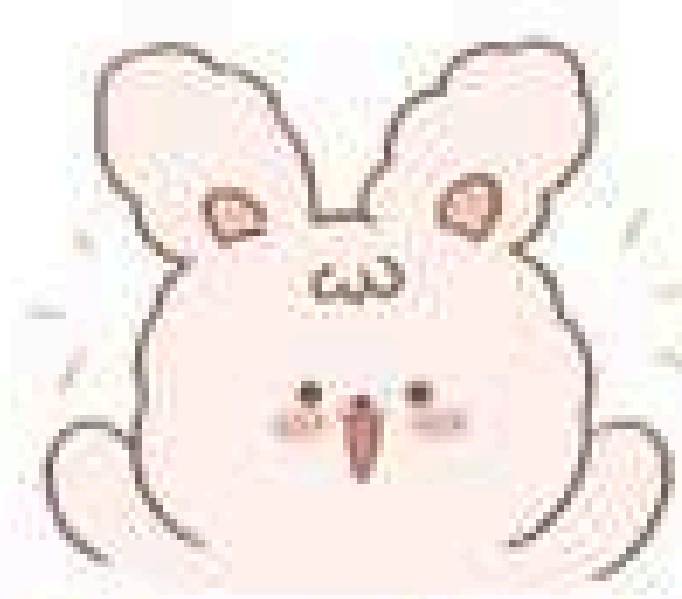
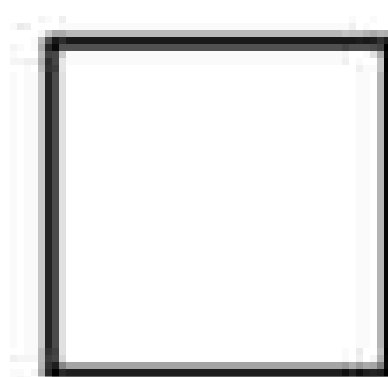
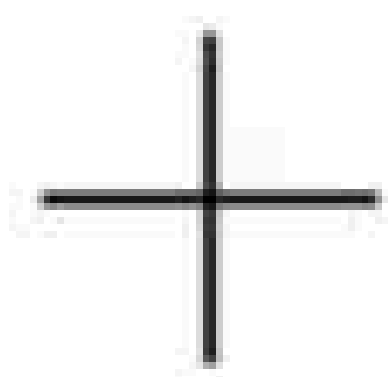
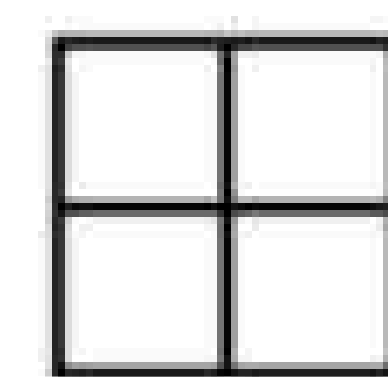


区别: 是否重新组合

求异是高频考点

求异/相减

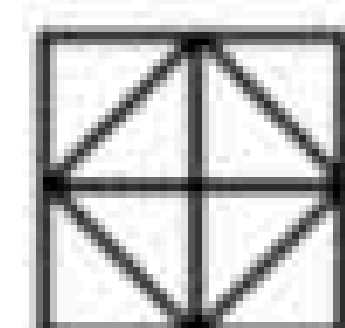
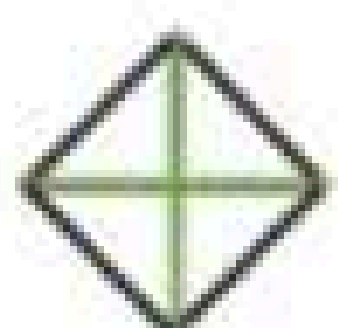
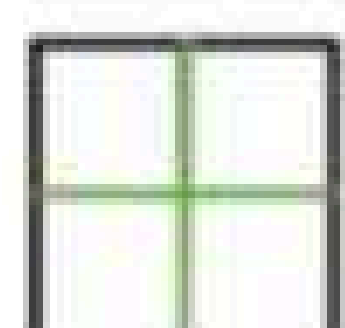
特殊情况



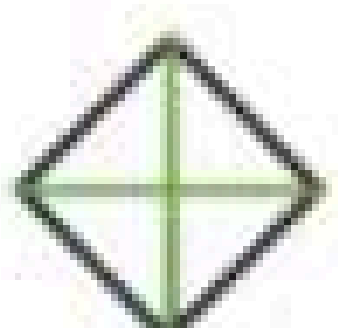
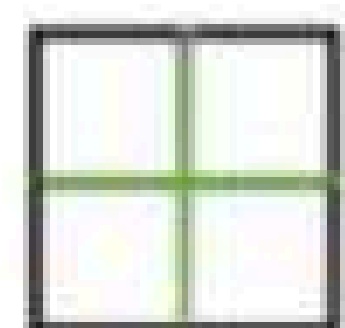
来源于小红书@贝栗子

➤ 加减同异-基础小结

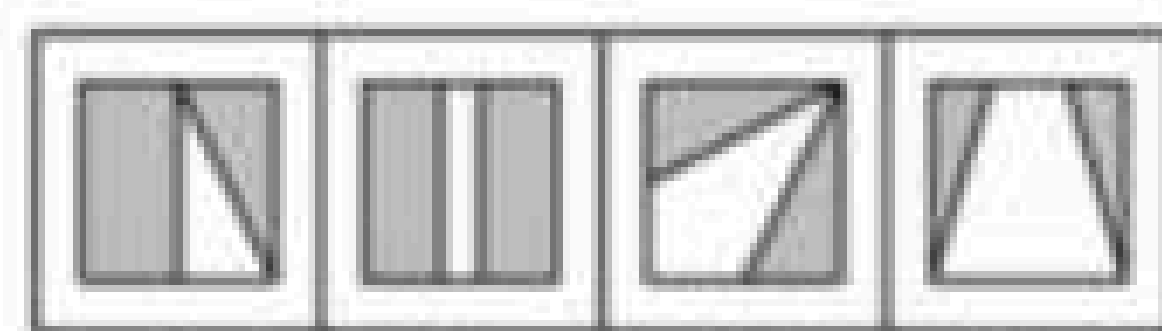
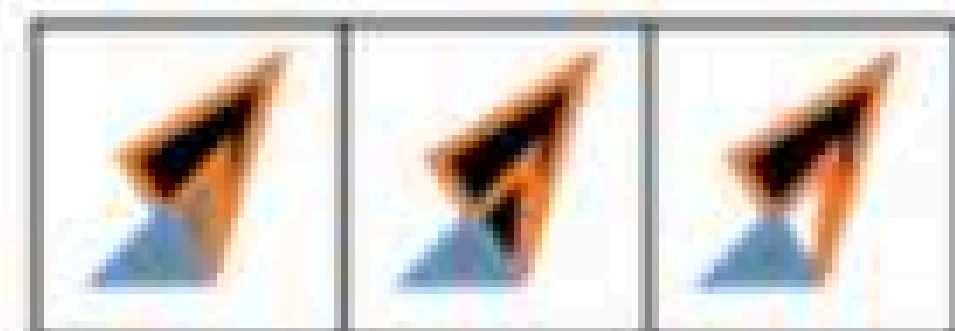
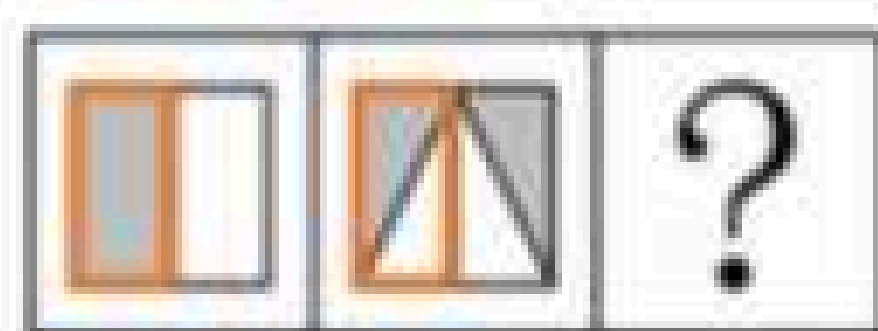
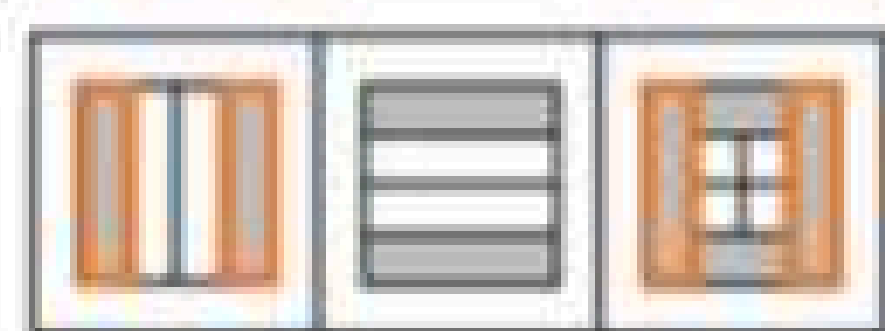
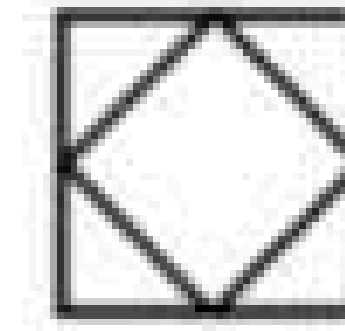
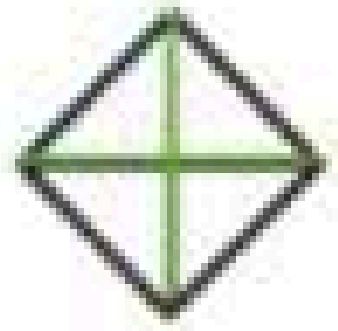
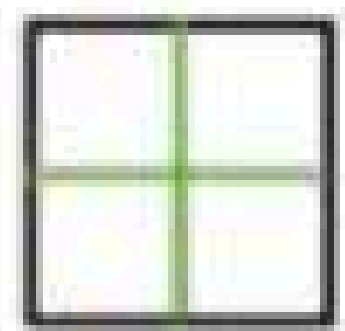
①相加



②求同



③求异



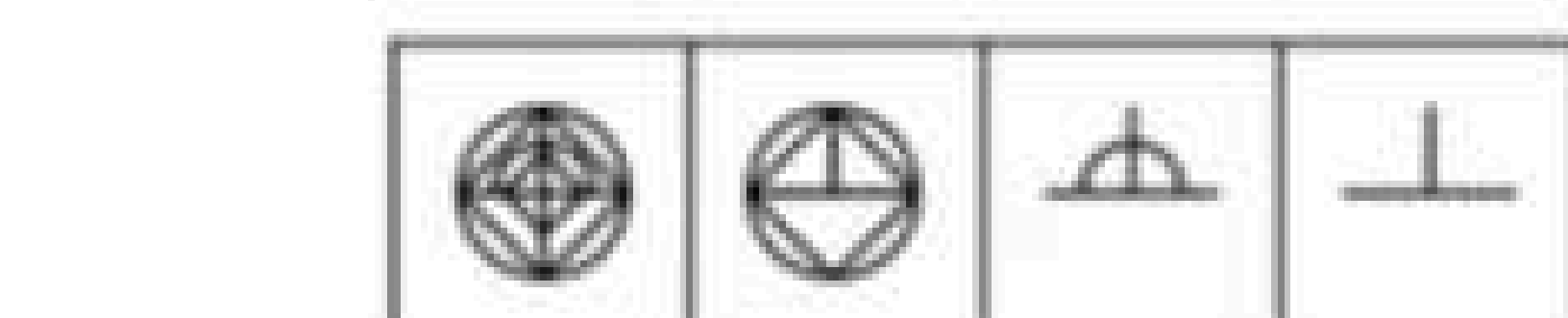
A ✓

B

C

D

叠加



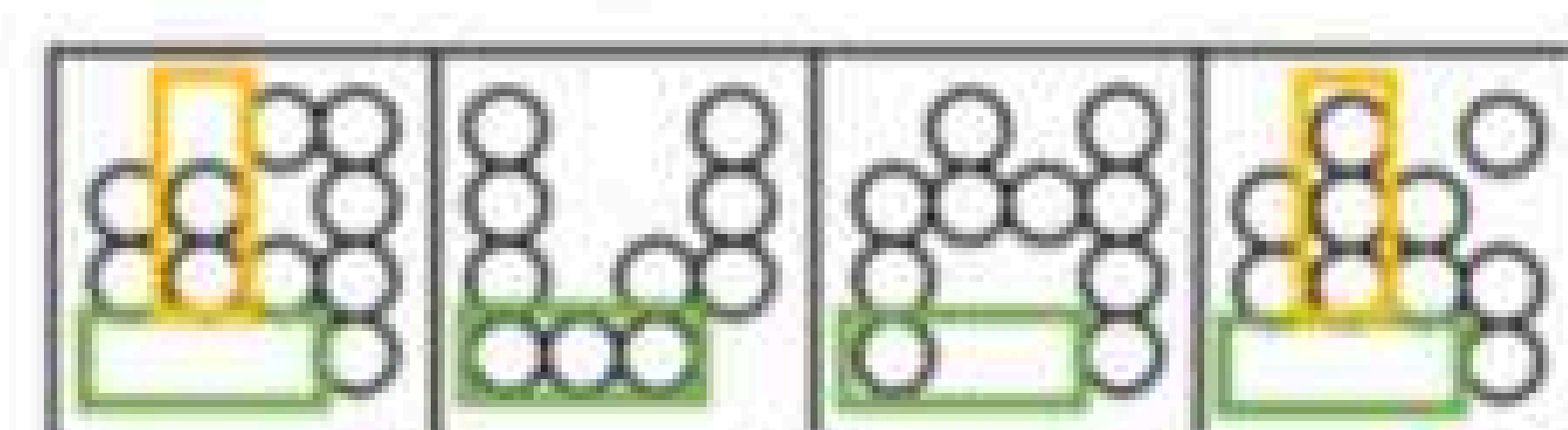
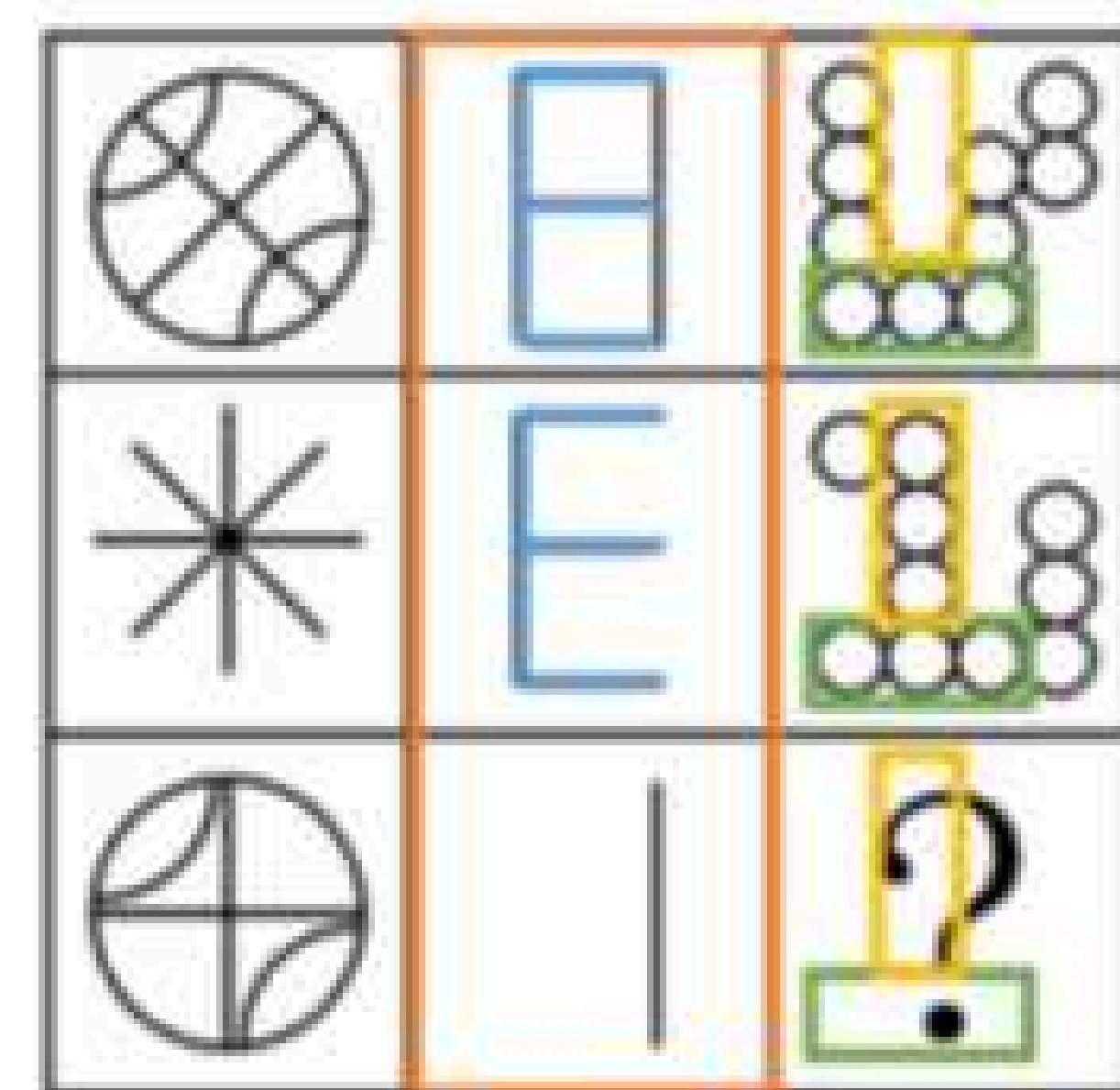
A

B

C

D ✓

求同



A

B

C

D ✓

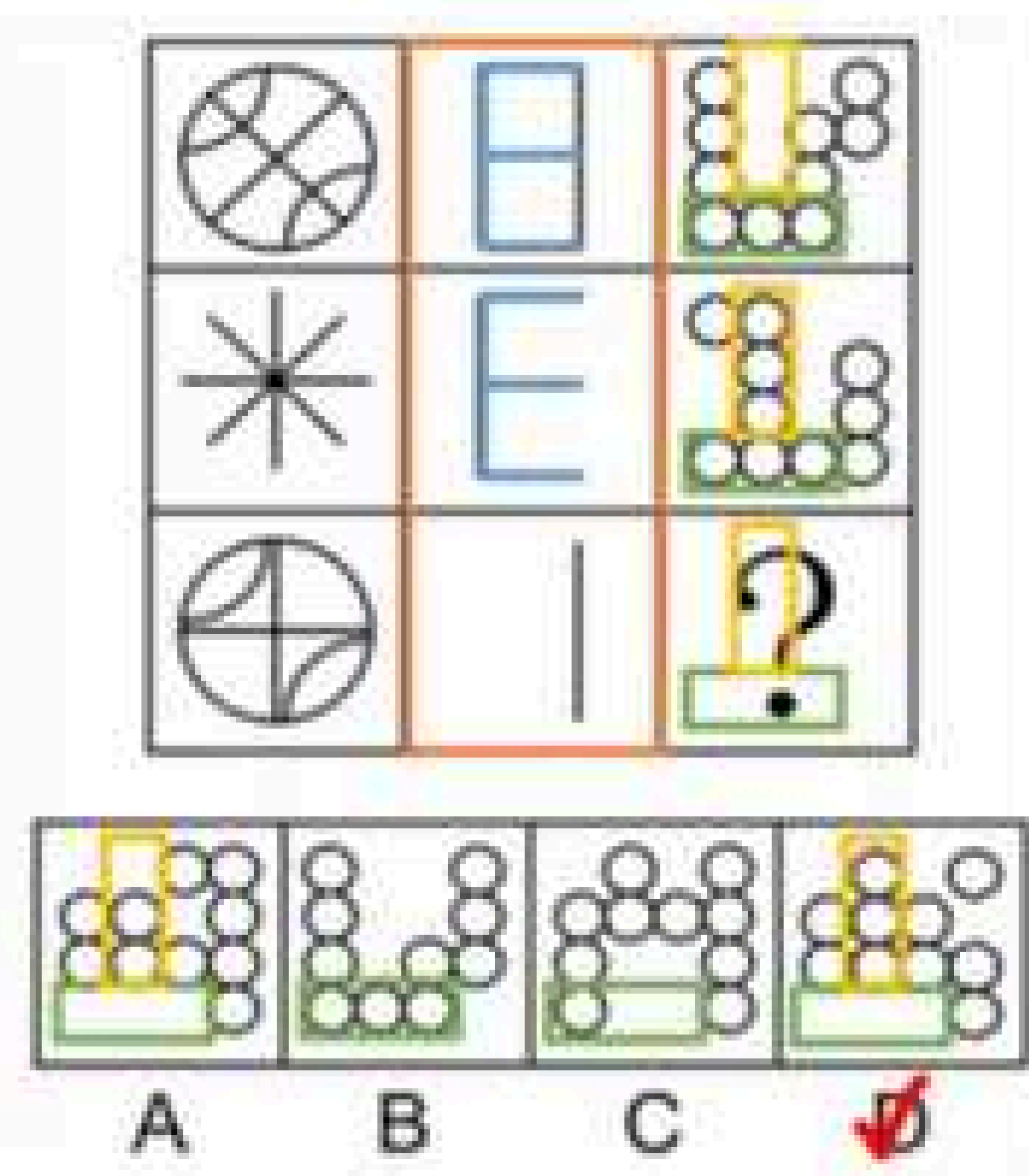
求异

相同区域 (大区域)

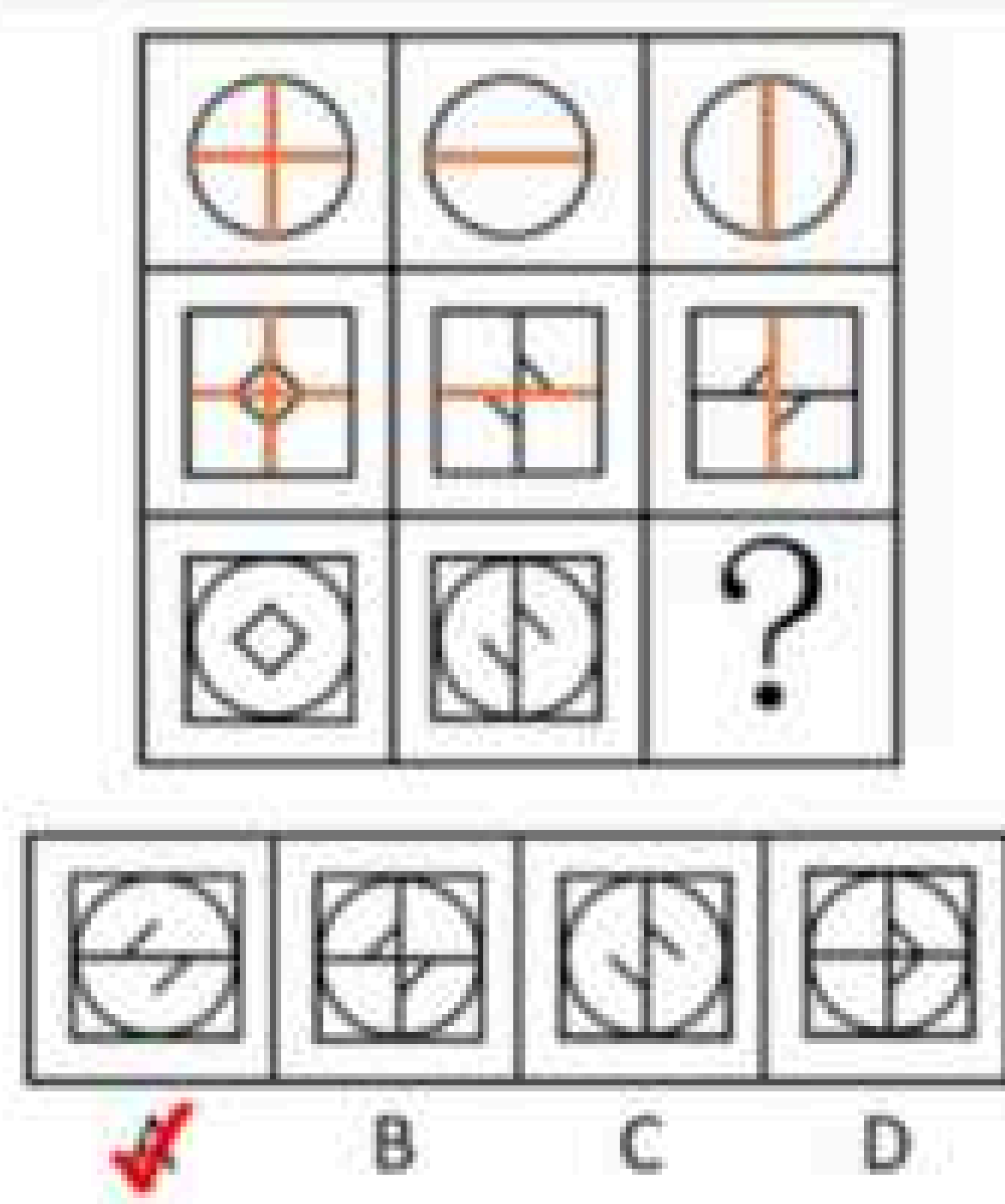
加减同异（拔高）

破解出题者“小心思”：

● 外框的迷惑



➤ 外框提示



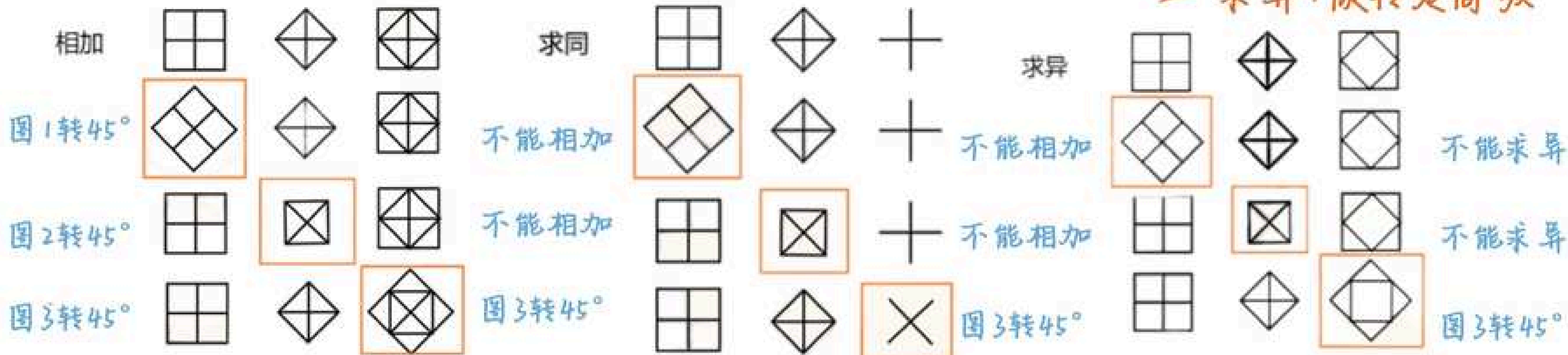
➤ 外框迷惑

➤ 横向不行,考虑纵向

● “图几转”?

小红书：@贝栗子

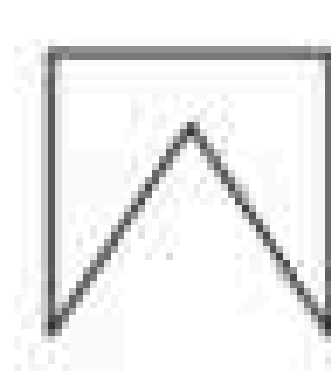
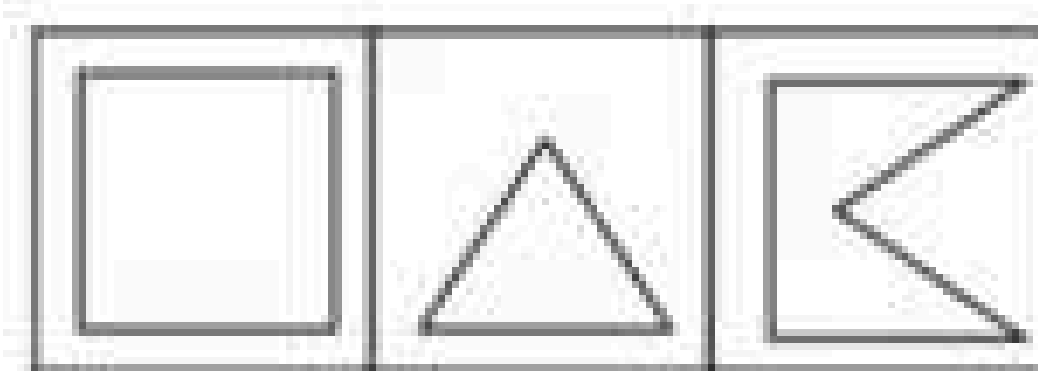
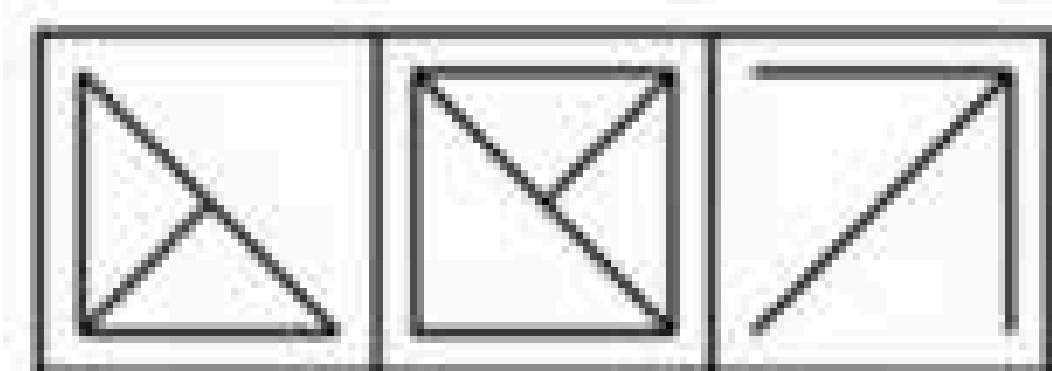
➤ 求异+旋转是高频



【答题思路】

确定“加减同异”后,第一步先看图1图2是否有相同线条

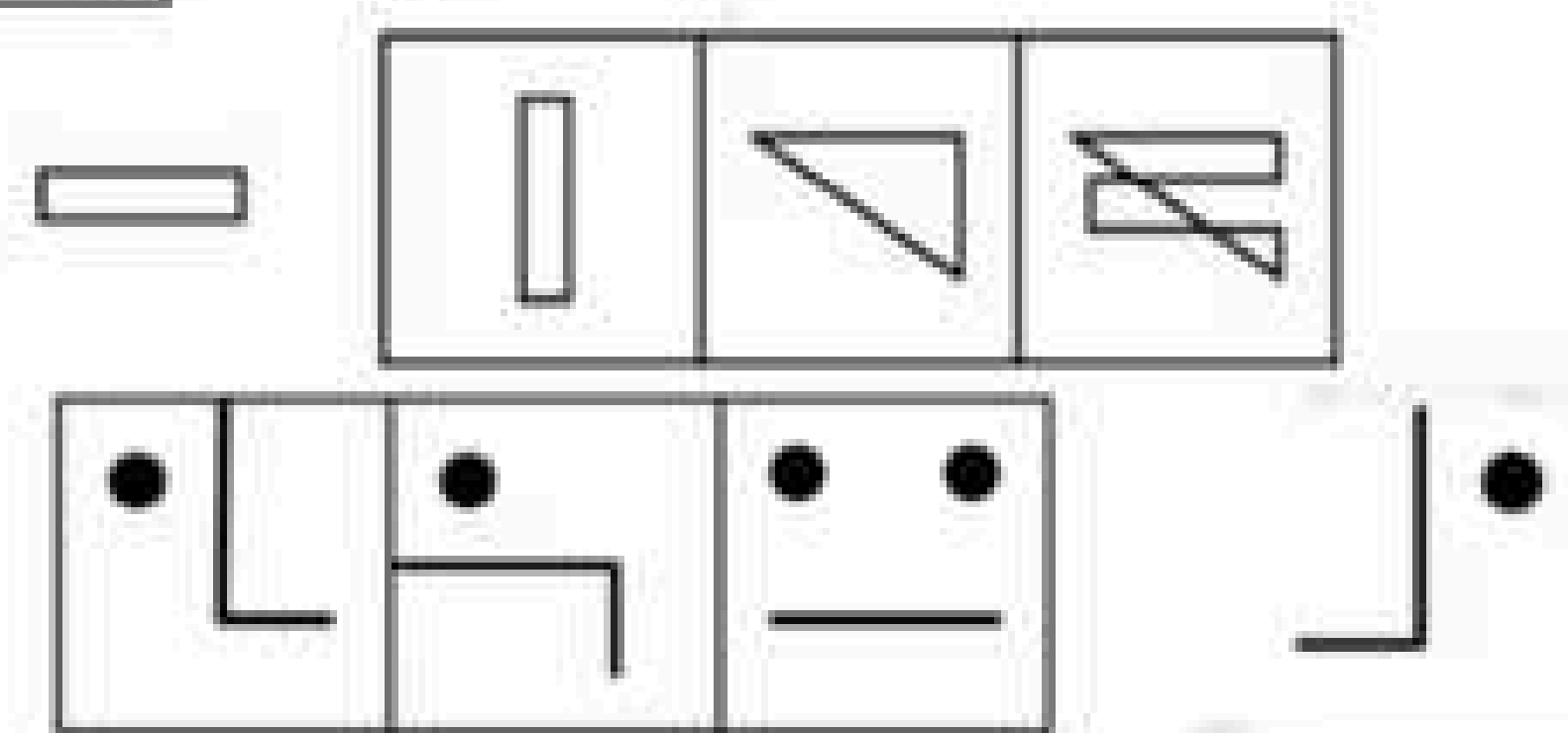
有相同先运算,再考虑图3转



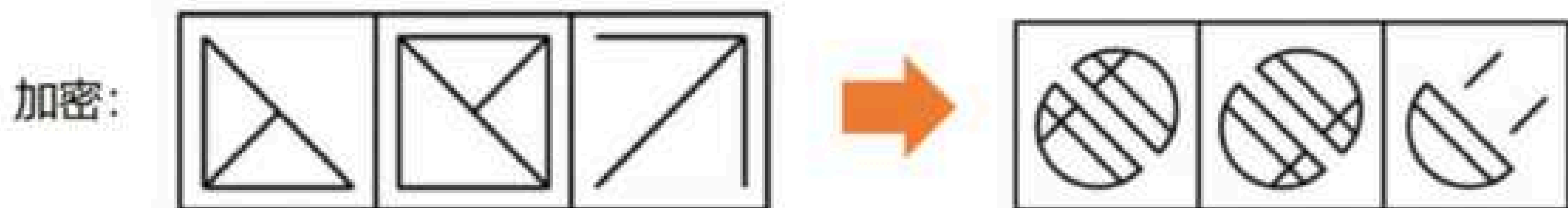
无相同先旋转,跟图3对比

①: 如果图2跟图3有相同线条,图1转;

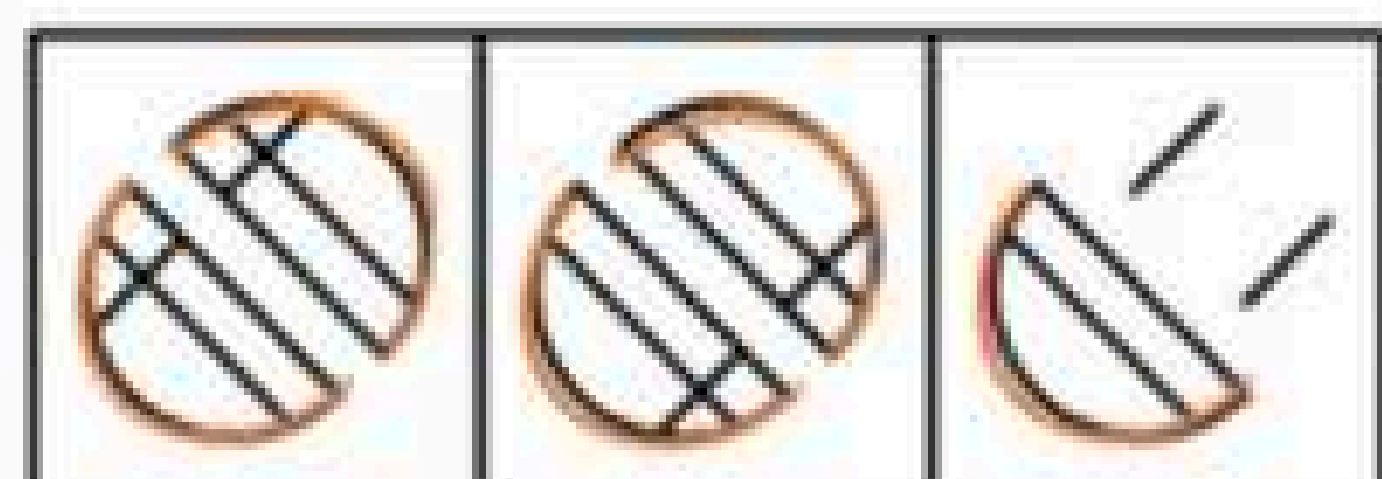
②: 如果图1和图3有相同线条,图2转



● 拆分思维(分开看)

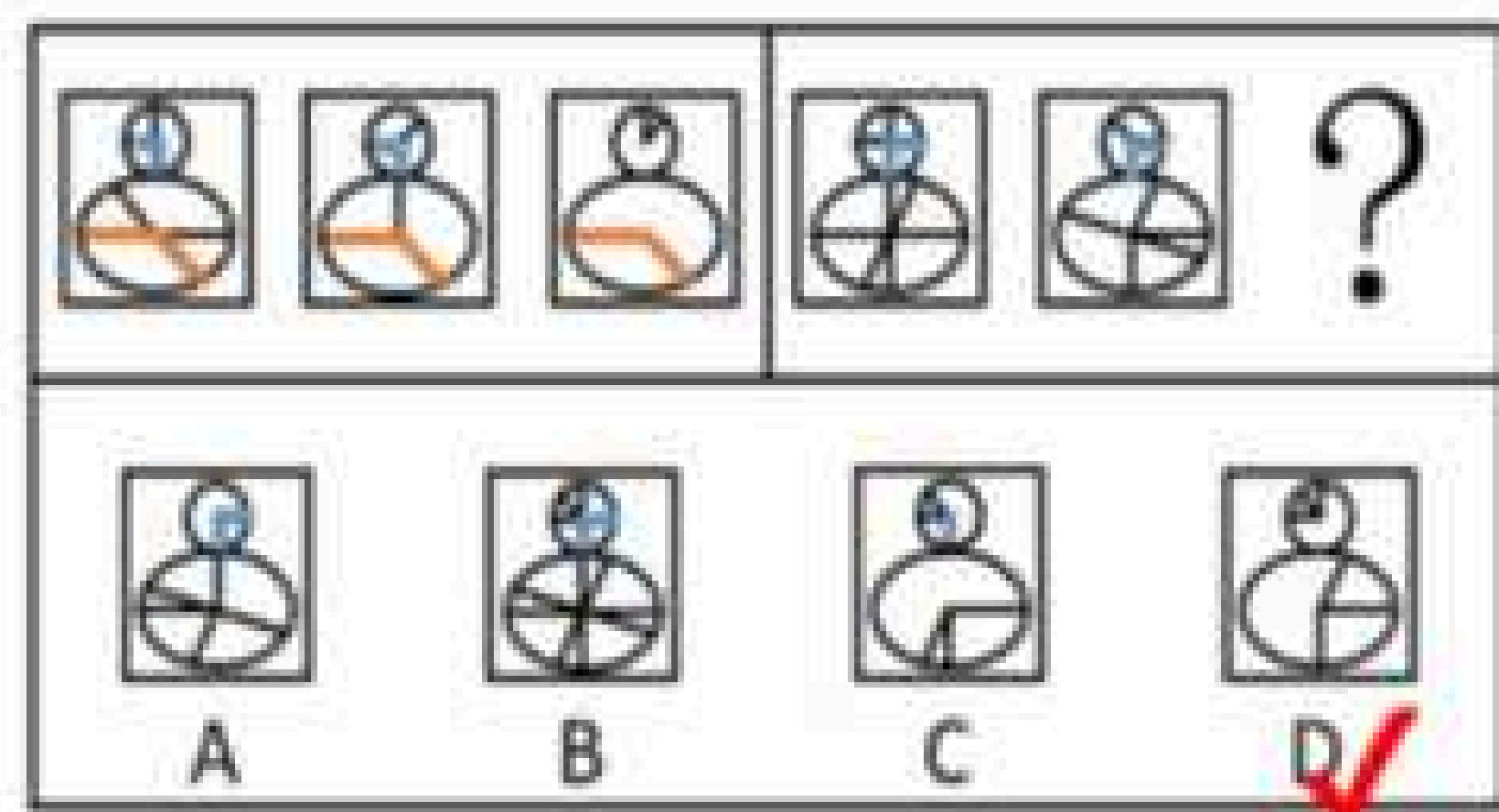
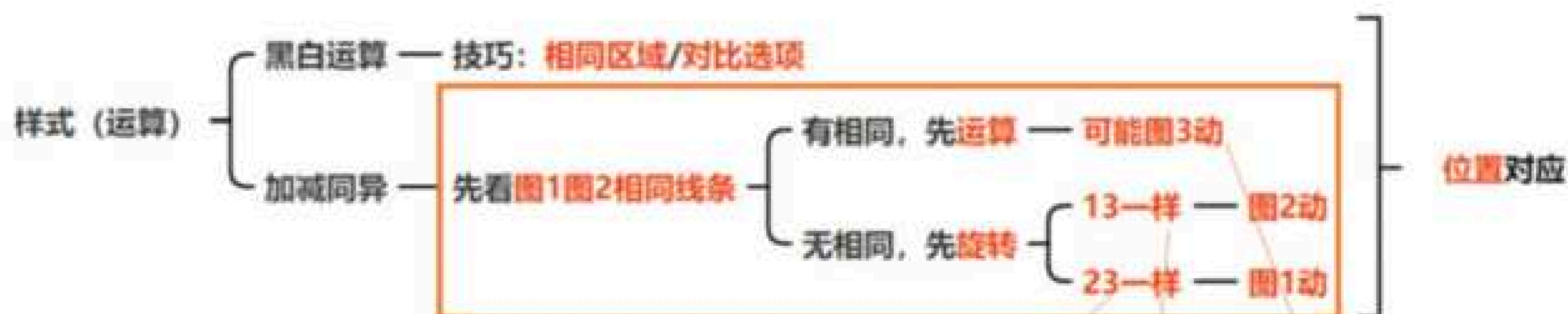


解密: 拆分思维 (分开看)



➤ 加减同异-拔高小结

刘义恒图推-加减同异-串讲

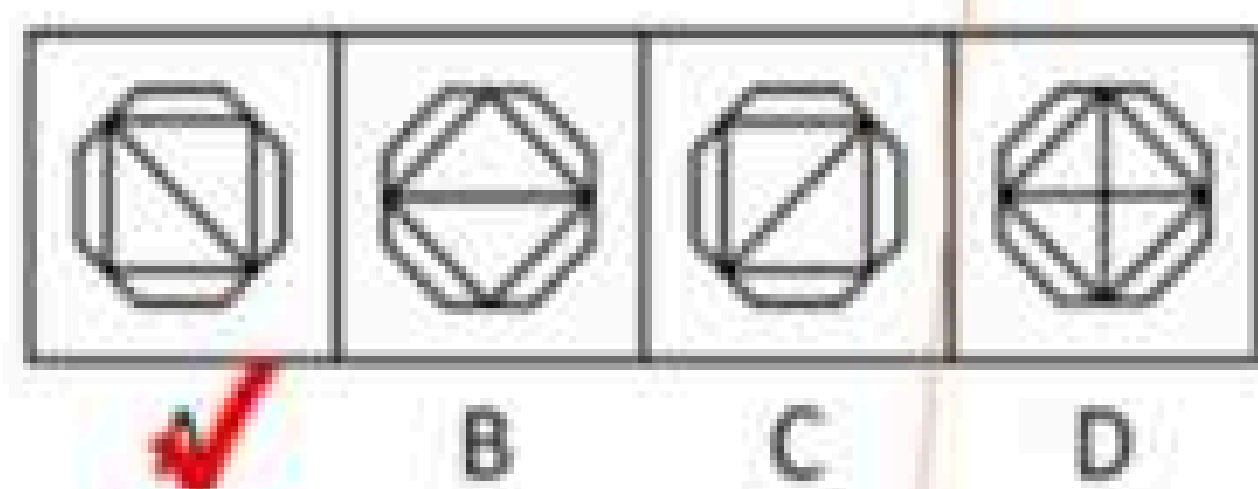
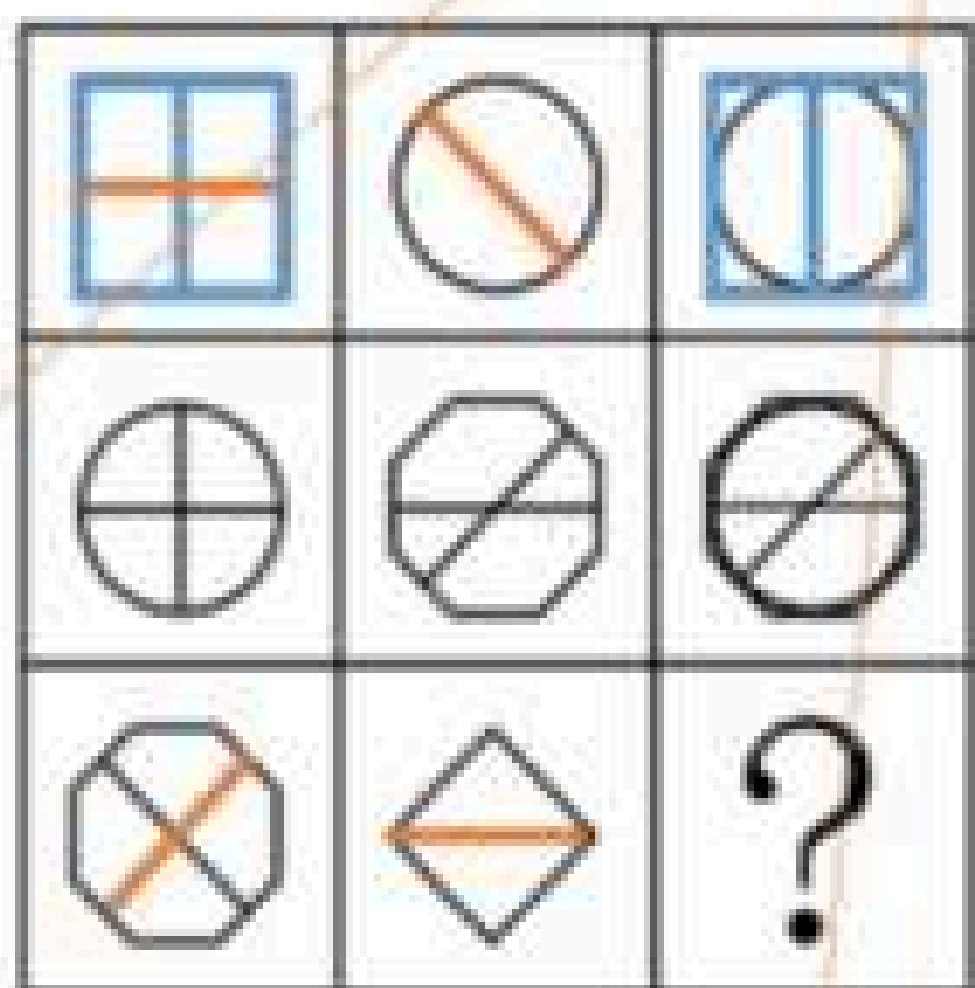


➤ 难点1: 拆分思维

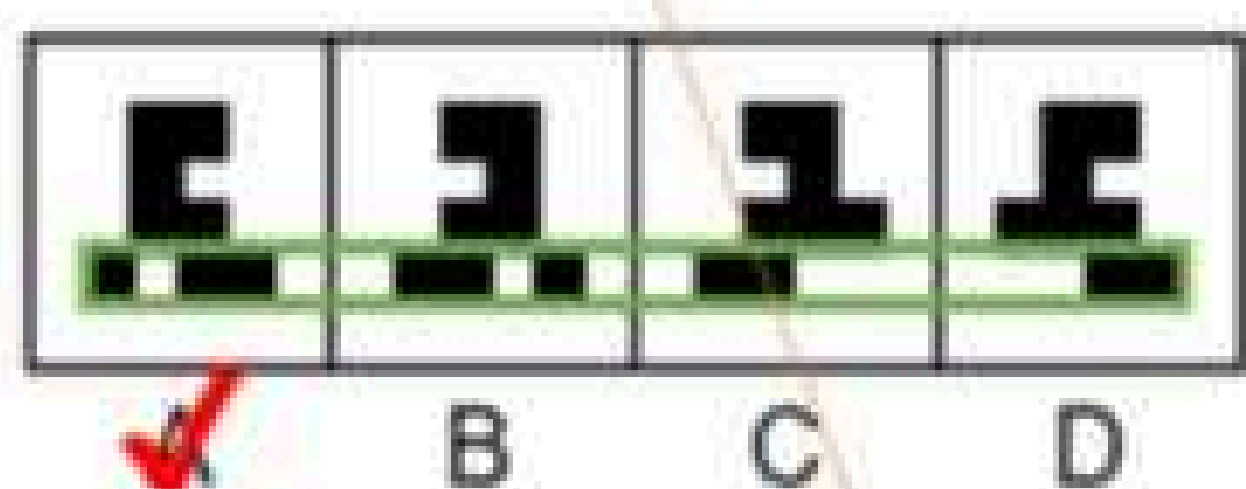
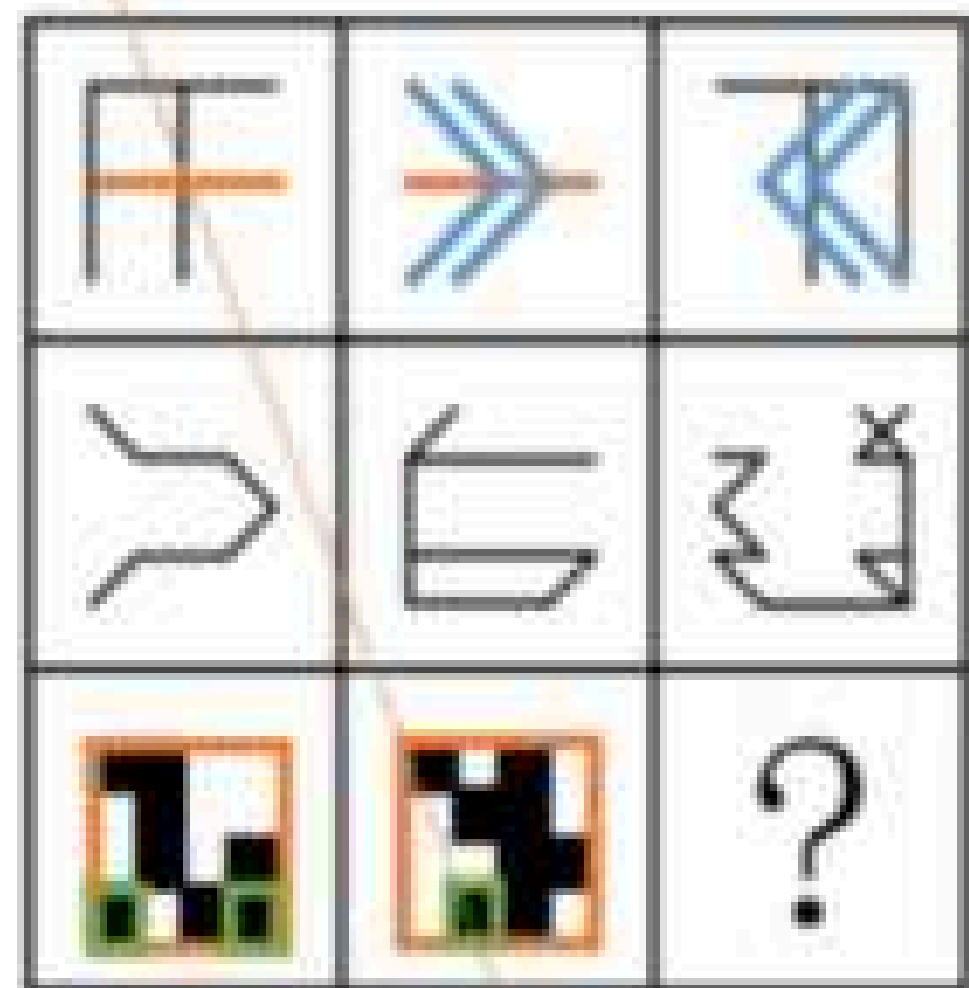


➤ 难点3: 图1动

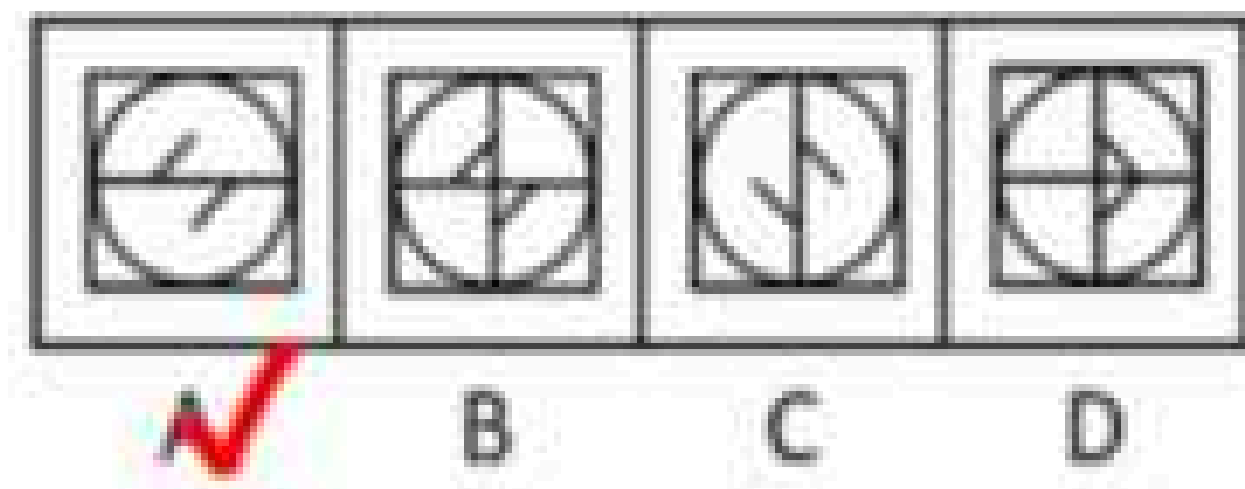
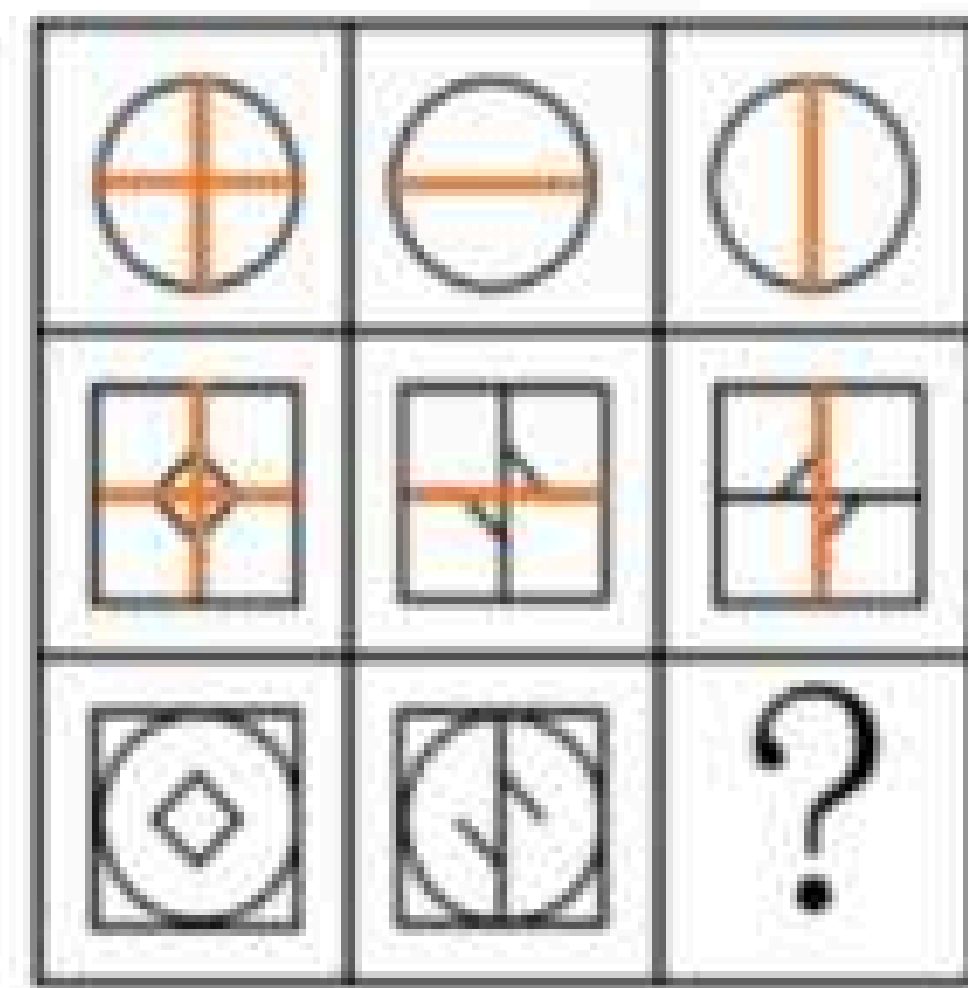
➤ 叠加关系



➤ 难点3: 图2动



➤ 难点3: 图3动



➤ 难点2: 纵向

小红书: @贝栗子

理论速记

【样式规律】 (运算):

①命题者作图特点: 每幅图**图案部分一样**。

②考点: 1. 加减同异、2. 黑白运算

【加减同异】:

①命题者作图特点: 图案**部分一样**, 且**位置对应**

②考点:

1. 相加、相减 2. 求异: **去掉**相同线条 3. 求同: **保留**相同线条

③答题思路: 确定“加减同异”后, 第一步先看**图1图2是否有相同线条**。

1. 有相同**先运算**, 再考虑**图3转**的可能。

2. 无相同**先旋转**, 跟**图3对比**:

如果图2跟图3有相同线条, **图1转**;

如果图1和图3有相同线条, **图2转**。

2.黑白运算

作图特点

相同的黑块重复出现

轮廓和分割区域相同,黑块个数不同

解题思路

- 相同位置的运算
- 【出题形式】两组图,九宫格
- 注意:(1)运算规则具体题目具体找
- (2)黑+白 不一定 等于 白+黑,要具体题目具体验证

提速技巧

1. 对比选项找差异 2. 相同颜色区域一起看

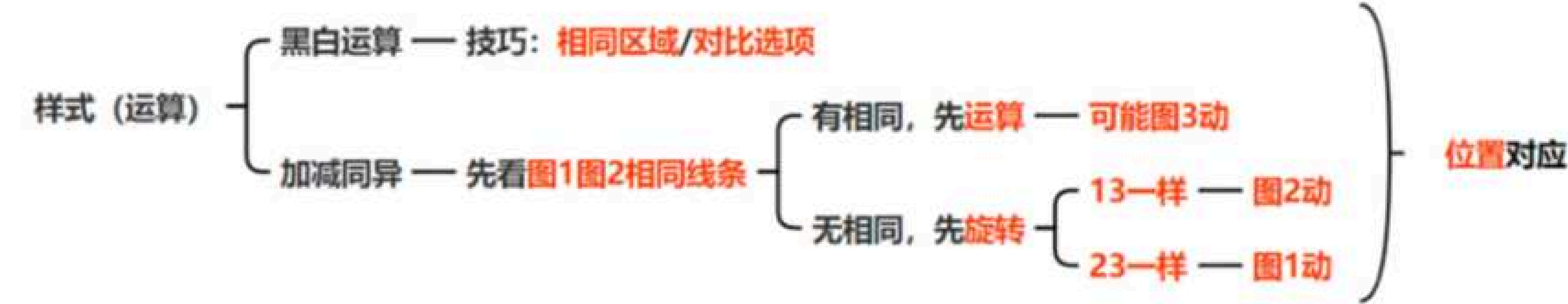
● 如何区分“黑白运算”与“加减同异”?

小红书: @贝栗子

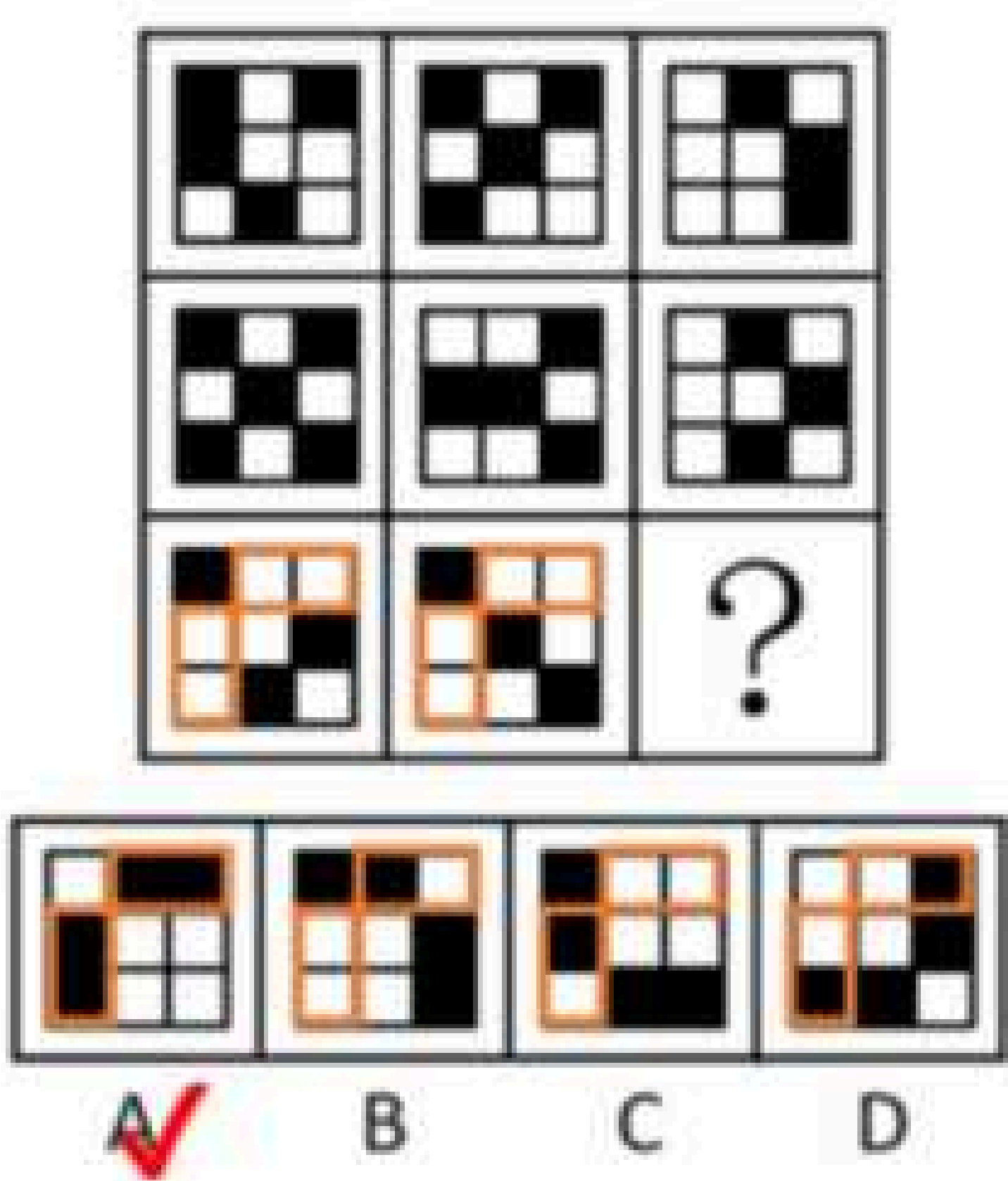
- ①运算逻辑相似(相同位置的运算),有时候不用刻意区分
- ②黑白运算画“黑块”居多,加减同异画“线条”居多。

黑白运算(拔高): $A+B=C$ (减少)

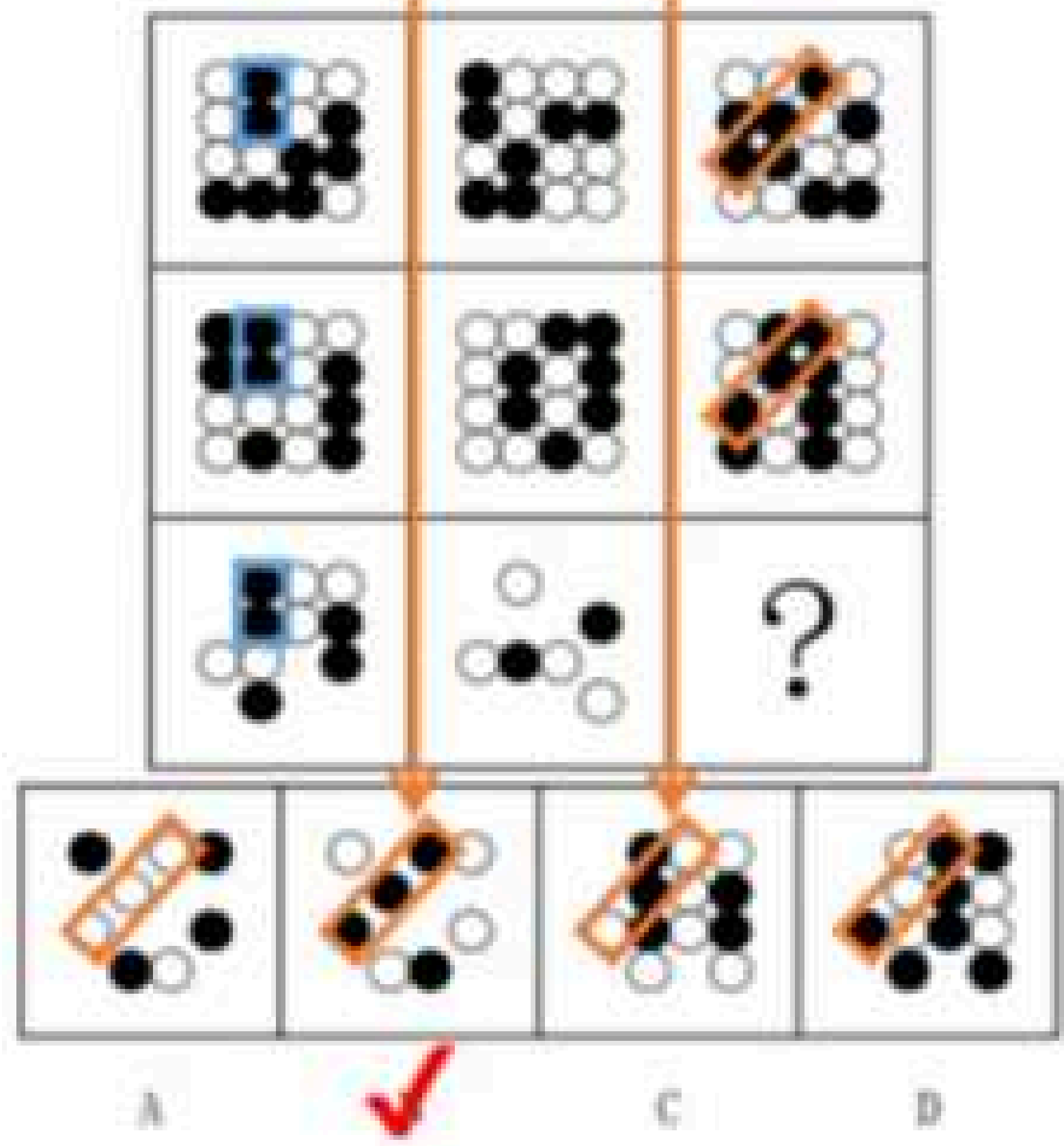
实战思维



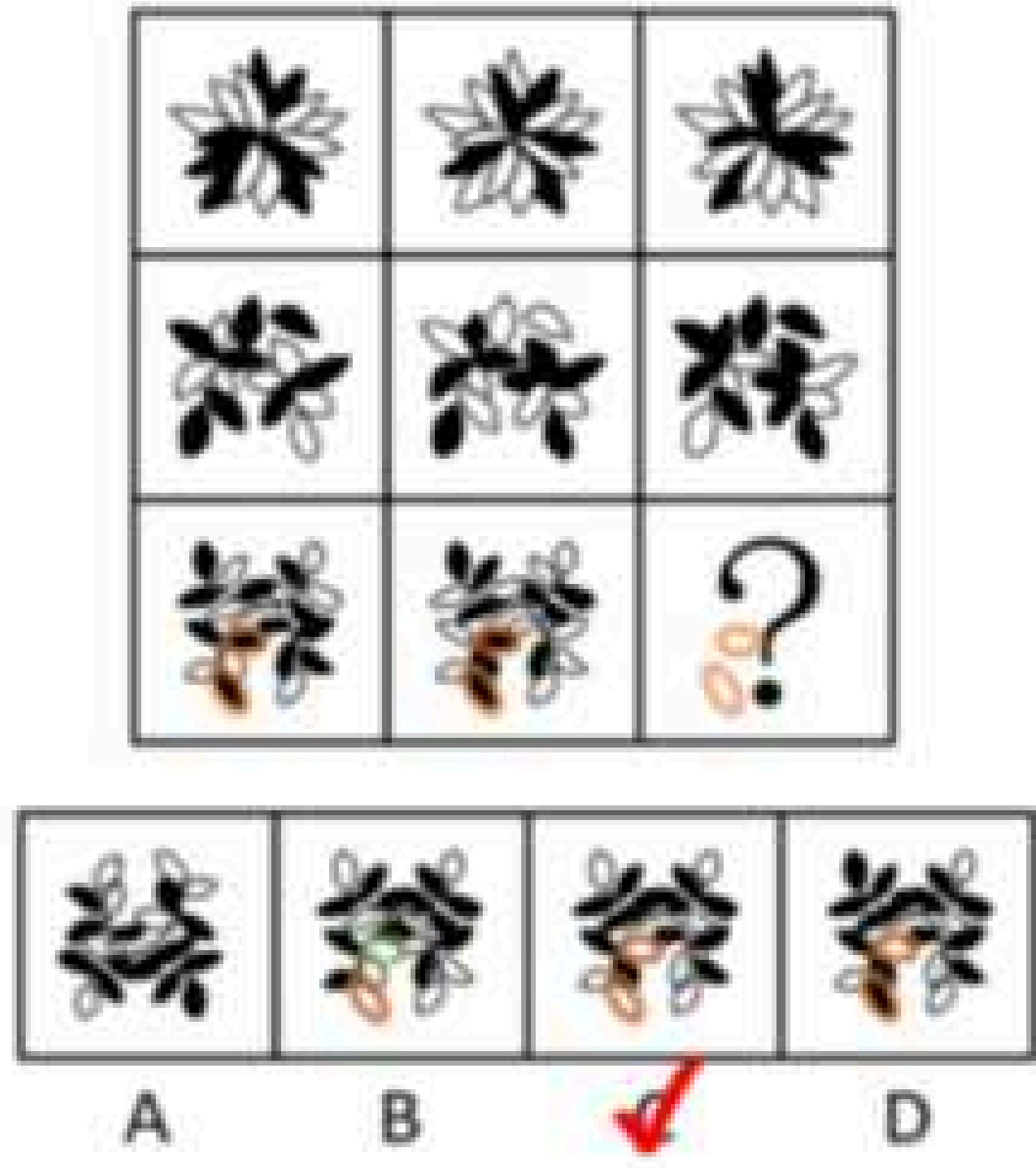
黑白运算-小结



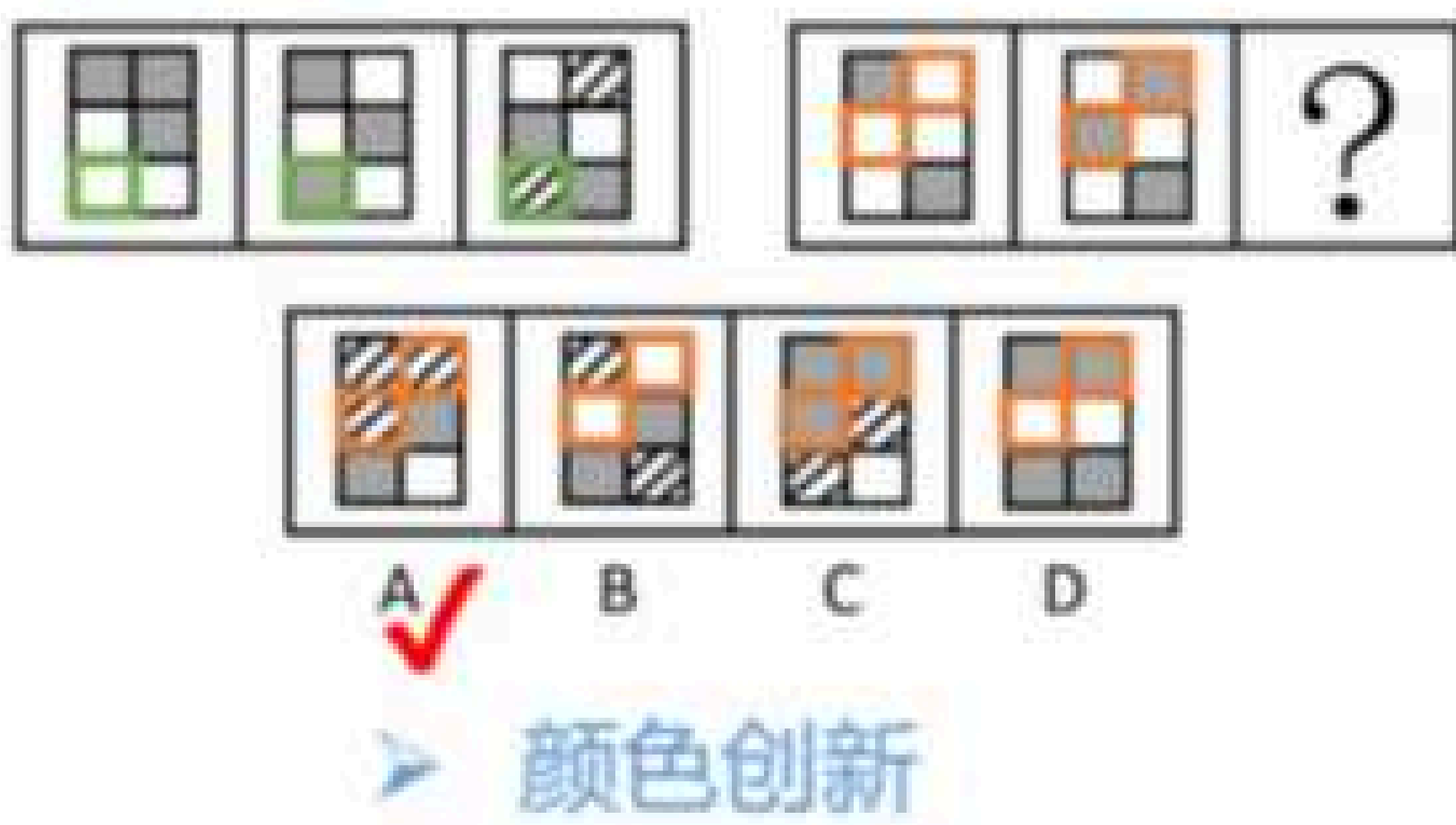
相同区域



纵向规律



外框创新



颜色创新



题型创新

理论速记

【样式规律】（运算）：

- ①命题者作图特点：每幅图**图案部分一样**。
- ②考点：1.加减同异、2.黑白运算

【加减同异】：

- ①命题者作图特点：图案**部分一样**，且**位置对应**
- ②考点：
 - 1. 相加、相减2. 求异：**去掉**相同线条 3. 求同：**保留**相同线条
- ③答题思路：确定“加减同异”后，第一步先看**图1图2是否有相同线条**。
 - 1.有相同**先运算**，再考虑**图3转**的可能。
 - 2.无相同**先旋转**，跟**图3对比**：
 - 如果图2跟图3有相同线条，**图1转**；
 - 如果图1和图3有相同线条，**图2转**。

【黑白运算】：

- ①命题者作图特点：图形**轮廓和分割区域**相同，且**黑块数量**不同
- ②答题思路：**相同位置**的运算
- ③小技巧：1.**相同区域**2.**对比选项**



来源于小红书@贝栗子

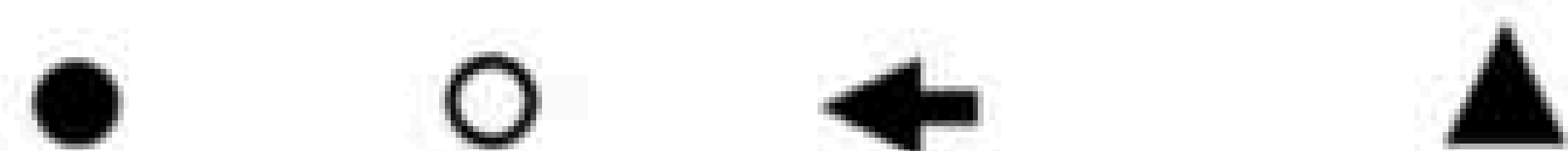


考点：标记(基础)

作图特点

每幅图有一样的小元素 → 优先考虑“标记作用”

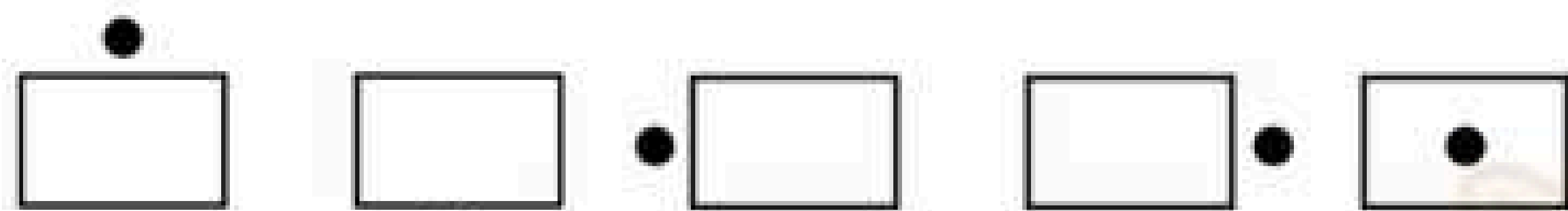
黑点、白点、箭头、其他小元素【每幅都有】



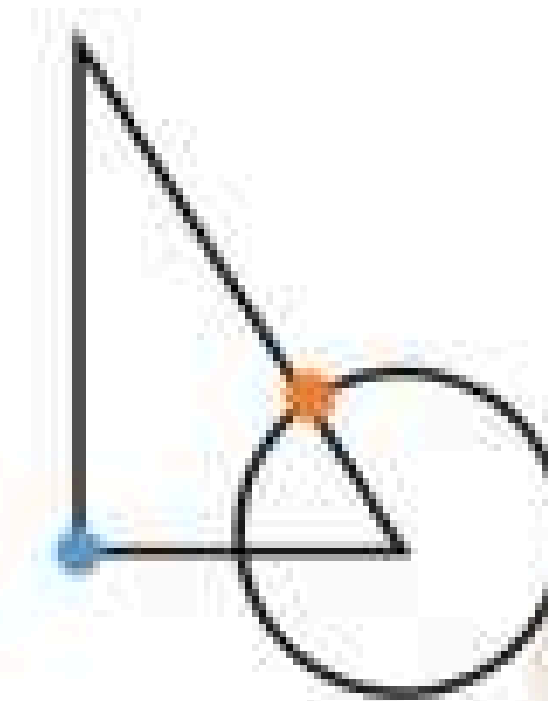
考查方式

① 标记位置

上、下、左、右、内、外



点：曲直性、引发的线条数量

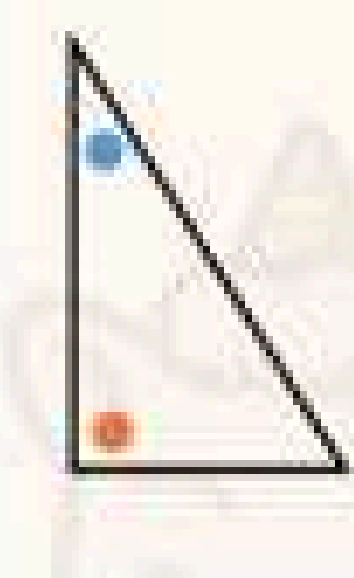


线：直线/曲线、最长线/最短线、线的位置

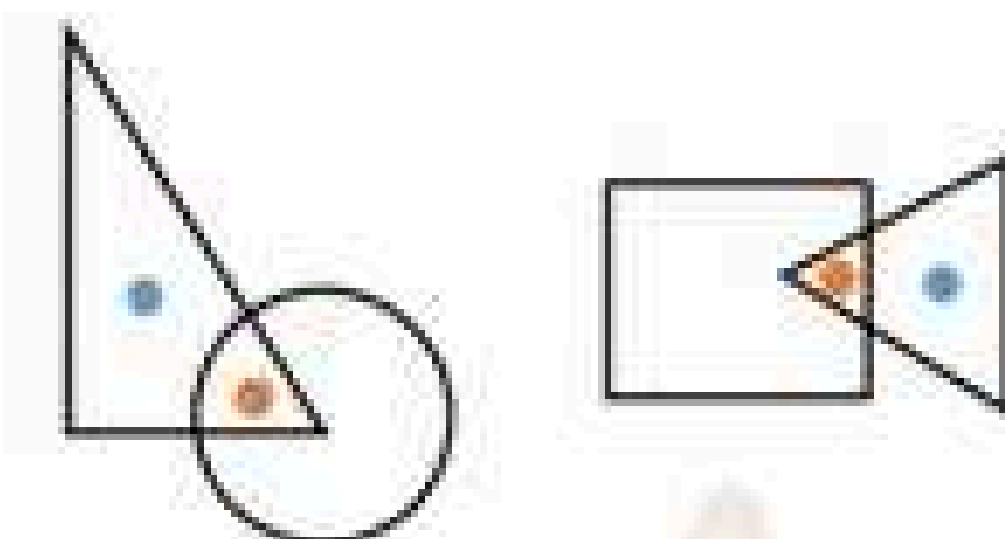


② 标记图形

角：直角/锐角/钝角；最大角/最小角

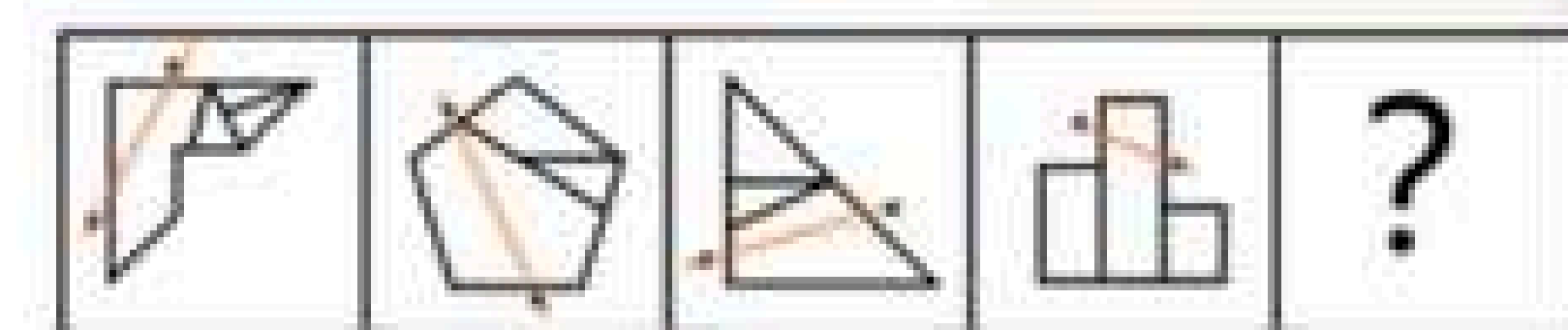
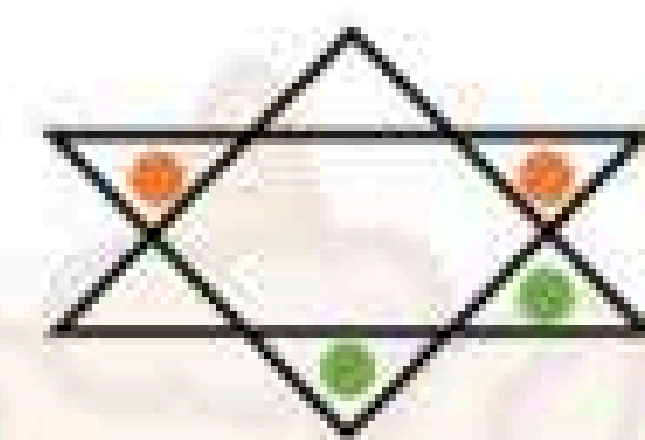
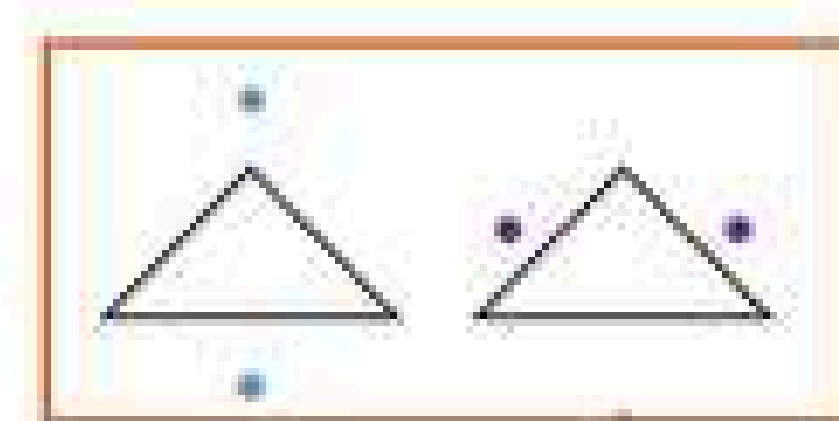


面：单独面/相交面、相同区域/不同区域、形状、属性、面积



多个标记

1. 标记物之间的比较
2. 连线后与原图关系



实战思维

标记

位置 — 上、下、左、右、内、外

小红书：@贝栗子

点 — 曲直性、引发的线条数量

线 — 直线/曲线、最长线/最短线、线的位置

角 — 直角/锐角/钝角、最大角/最小角

面 — 单独面/相交面、相同区域/不同区域、形状、属性、面积

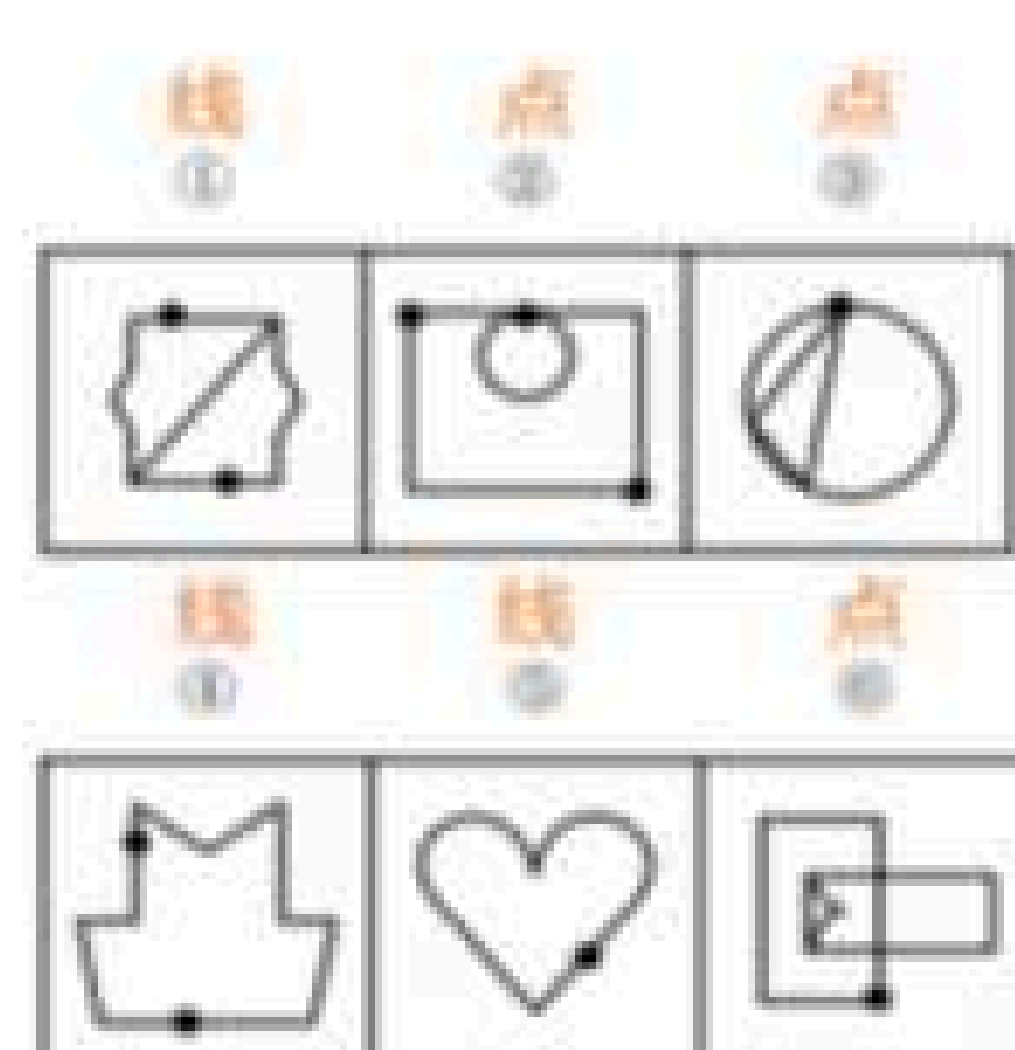
多个标记 — 标记物之间的比较，或者连线后与原图关系

都有小图案标记

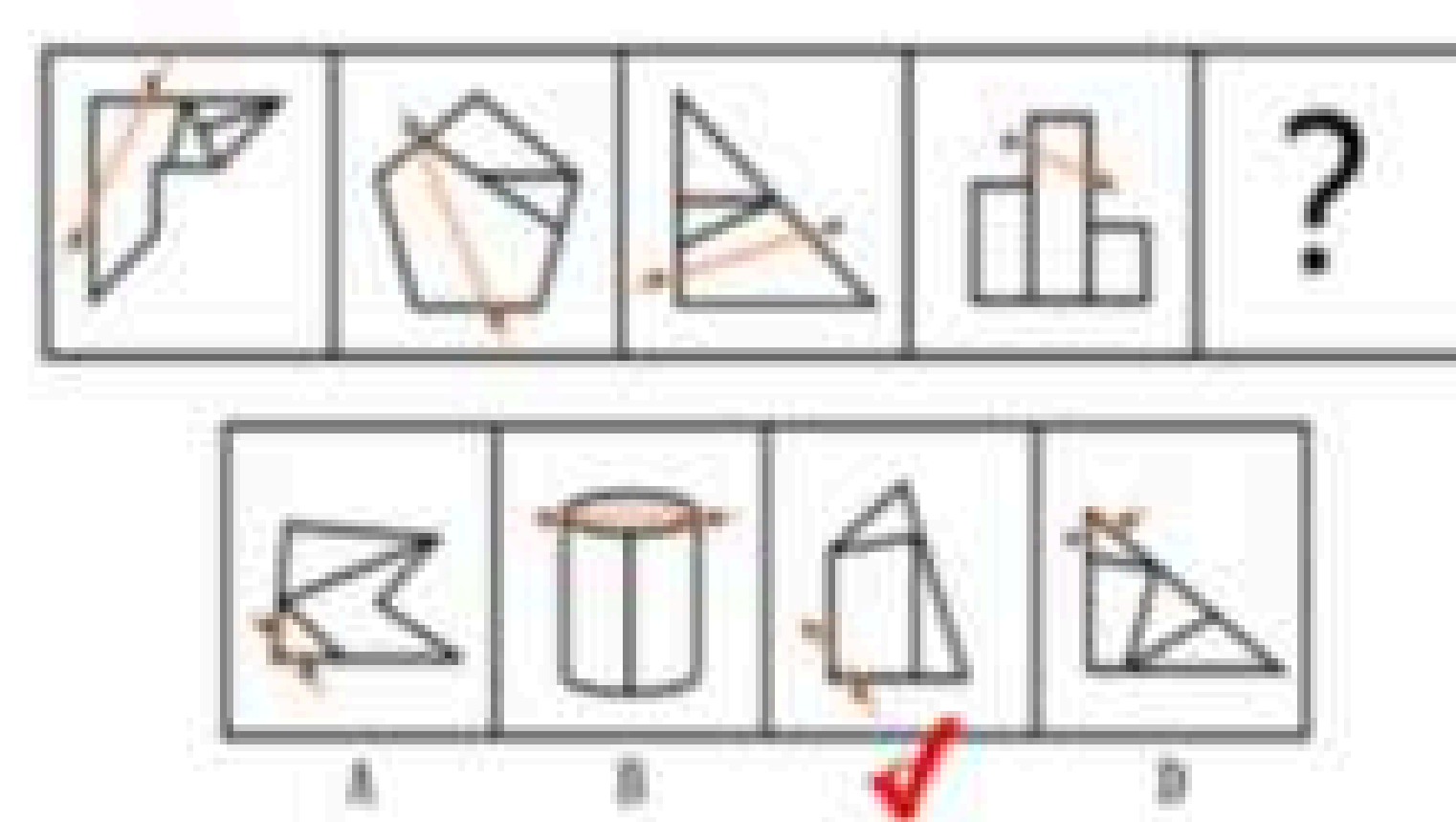
➤ 标记-小结 ➤ 均有“标记物”



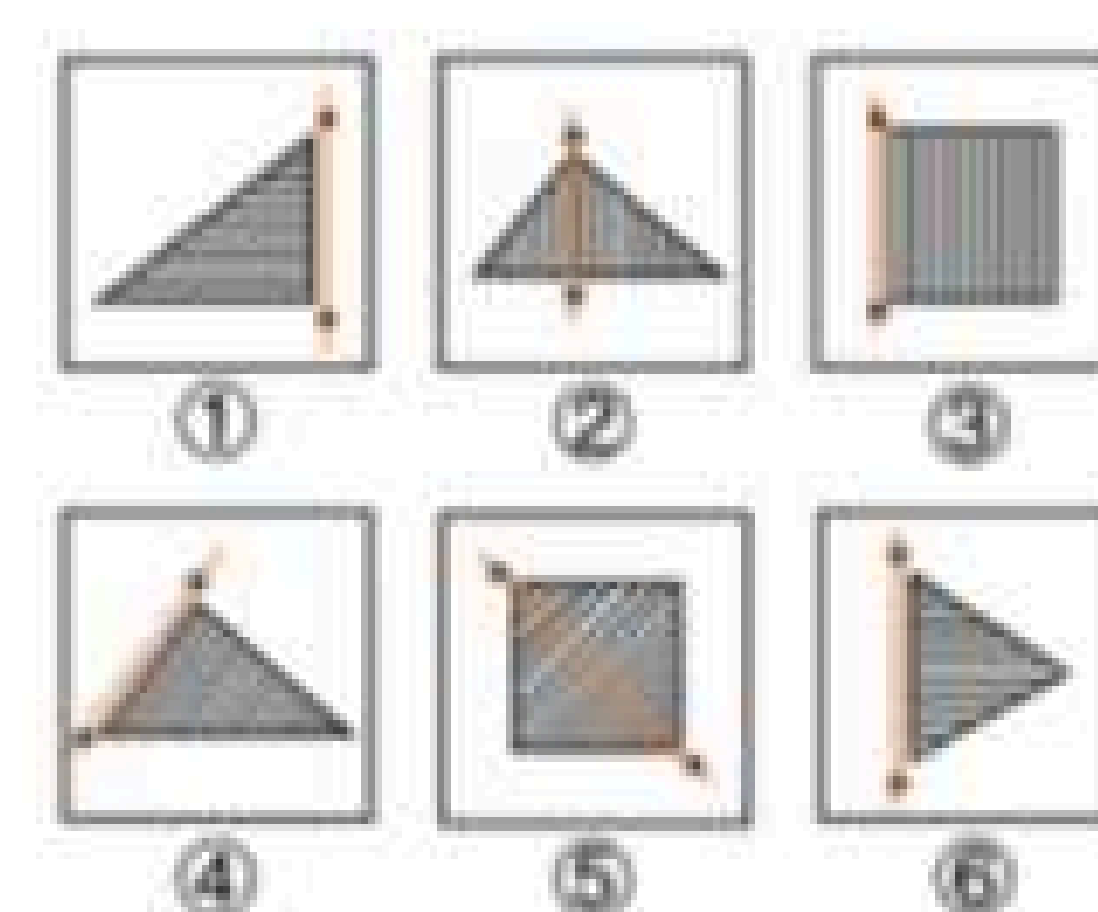
➤ 标记-曲线/直线



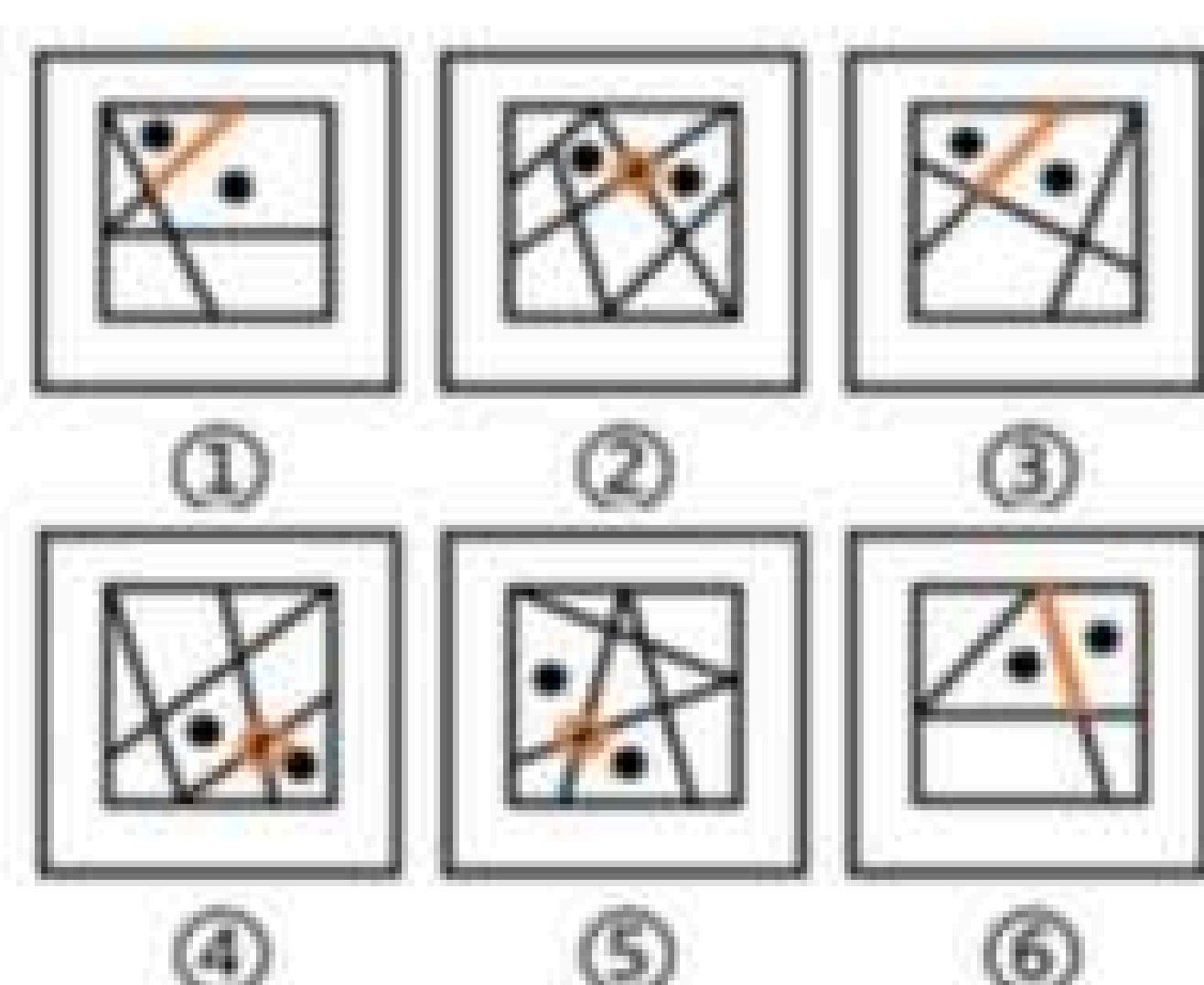
➤ 标记-点/线



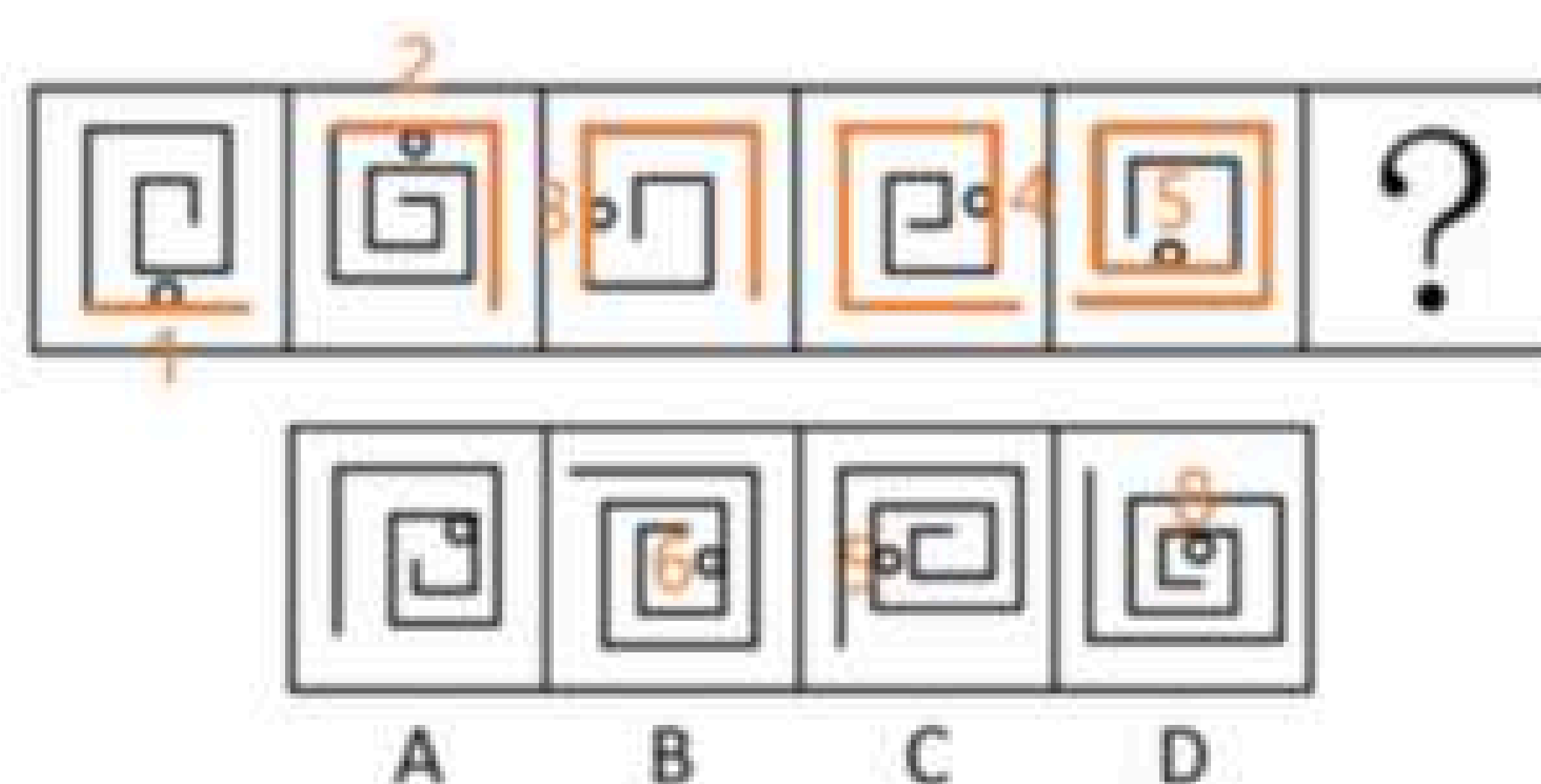
➤ 标记-连线后-最大面



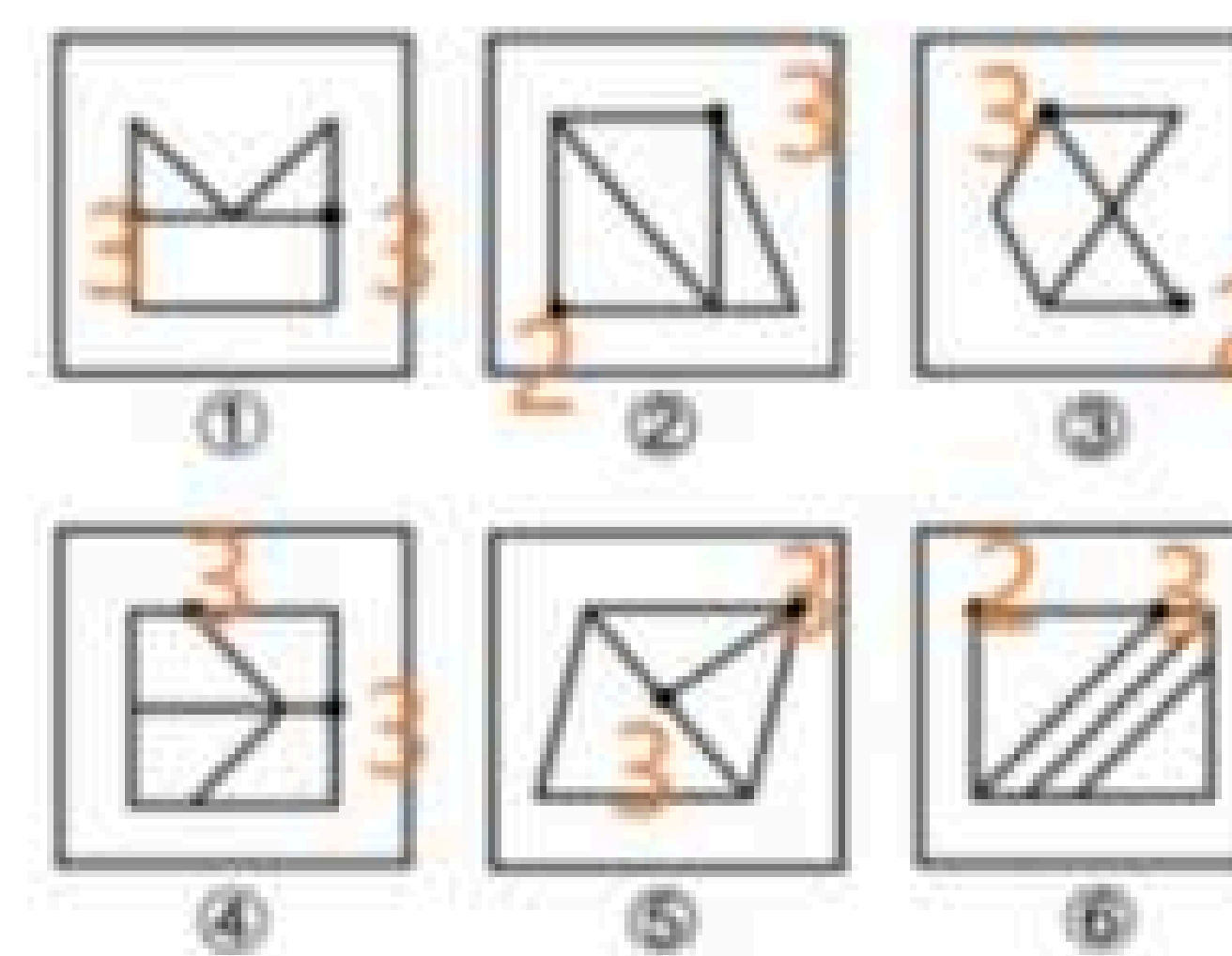
➤ 标记-连线后-平行/垂直



➤ 标记-两个面的位置关系



➤ 标记-线的位置



➤ 标记-引发线条数量

理论速记

【标记作用】：

①命题者作图特点：每幅图**图案部分一样**，例如都有黑点、白点、箭头等**小图案**进行**标记**

②考点：1.标记**位置**（常见：上、下、左、右、内、外）

2.标记**图形**

点：曲直性、**引发的线条数量**

线：直线/曲线、最长线/最短线、**线的位置**

角：直角/锐角/钝角、最大角/最小角

面：单独面/相交面、相同区域/不同区域、**形状、属性、面积**

③多个标记：1.**标记物之间的比较**2.**连线**后与原图关系



“起步就是冲刺”

“开局就是决战”

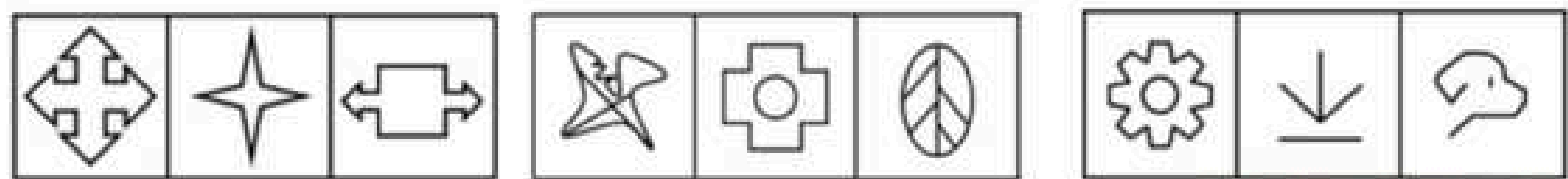


第三节：属性与图形关系

作图特点

每幅图图案不同

考点：①：对称性 ②：曲直性 ③：开闭性

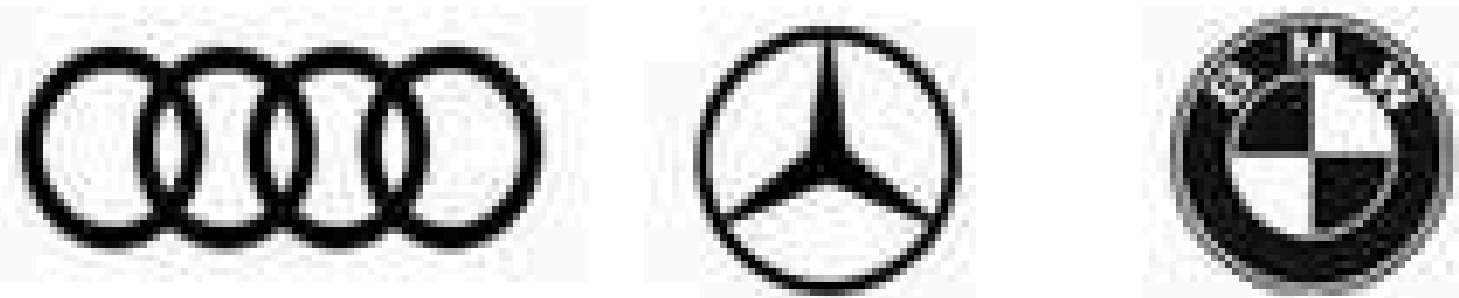


出题者作图：规则 出题者作图：曲线 出题者作图：生活化

1.对称性【高频】

作图特点

每幅图图案不同，图形很“规则”“美观”

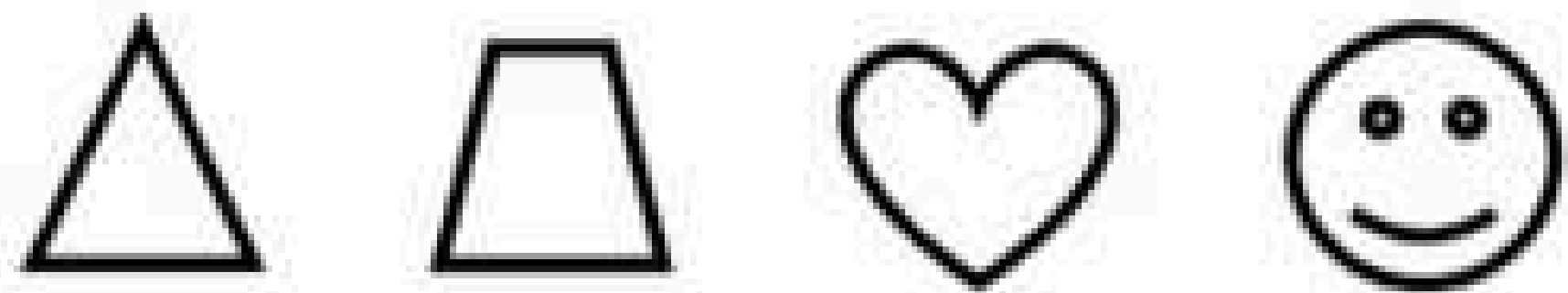


解题思路

每幅图图案不同 → 优先属性 → 对称性(规则)

对称类型

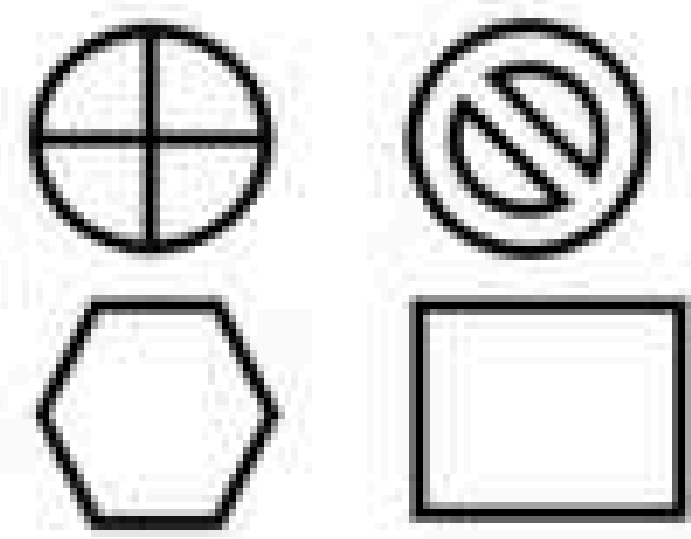
轴对称：“等腰”元素出现(能画对称轴)



中心对称：平行四边形、N、Z、S变形、相同图形反着放(180°)

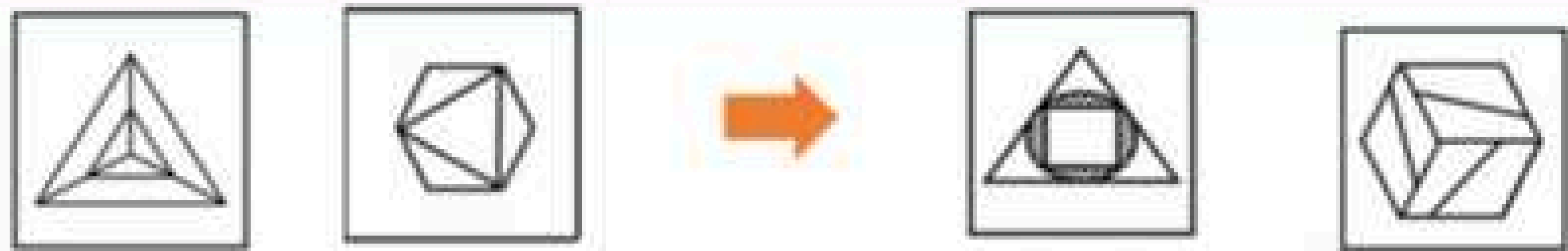


轴+中心对称：存在相互垂直的对称轴(能画对称轴，旋转180°)



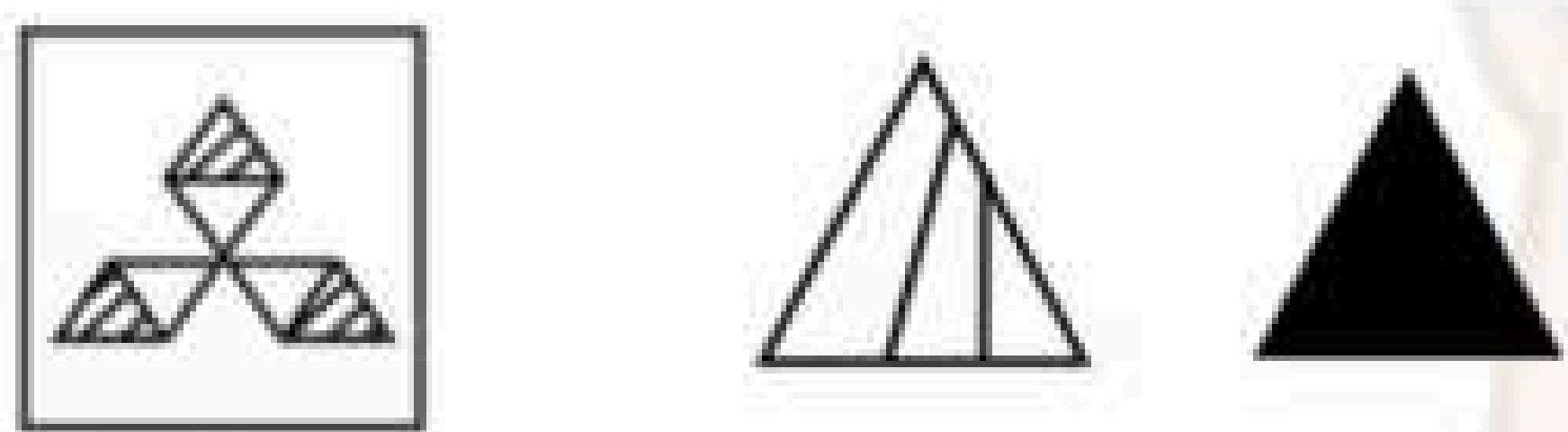
破解出题者“小心思”

加密：



利用“对称外框”迷惑

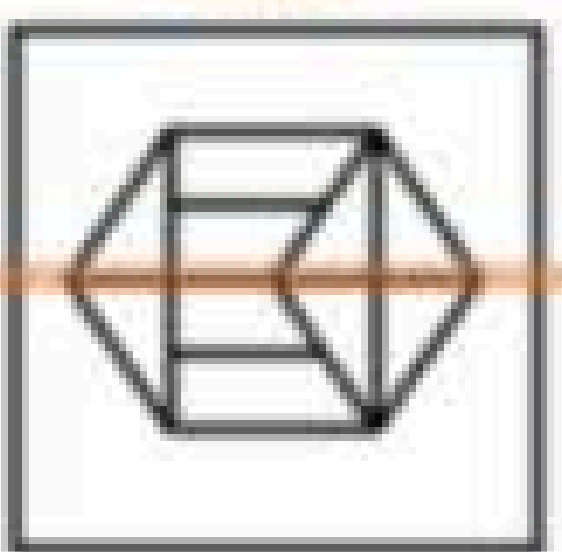
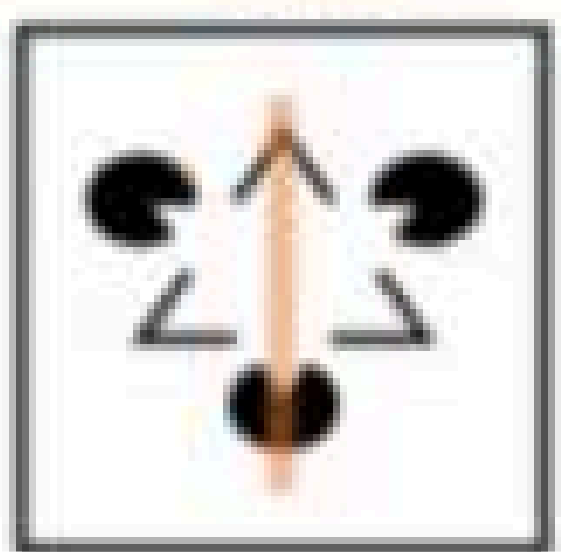
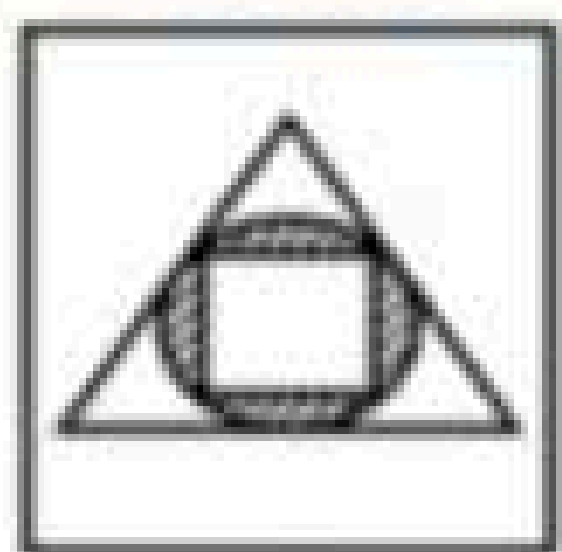
解密：注意内部的填充



不对称

对称

对称



①

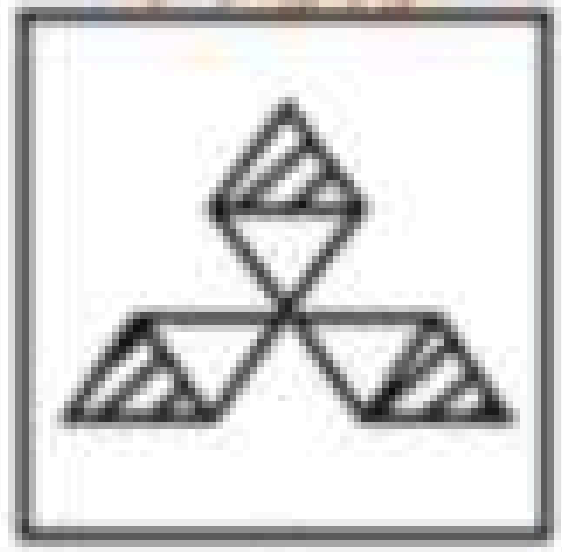
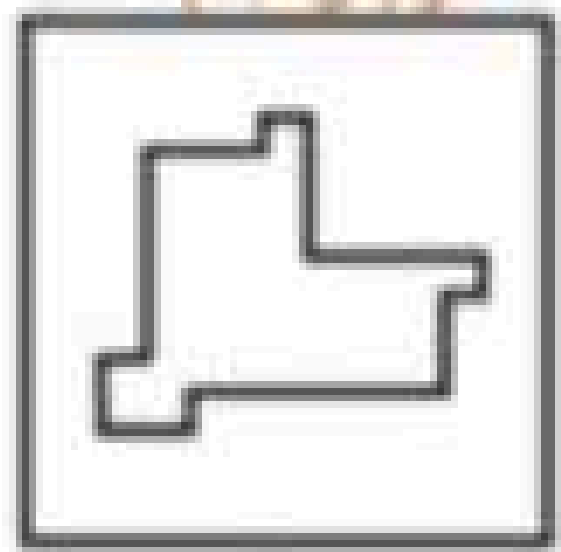
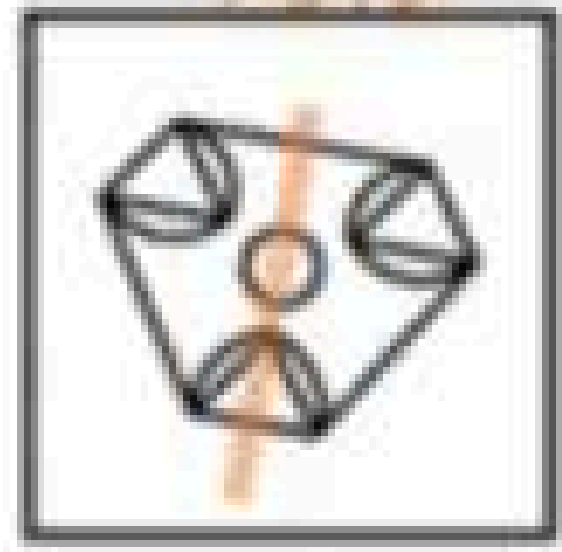
②

③

对称

不对称

不对称



④

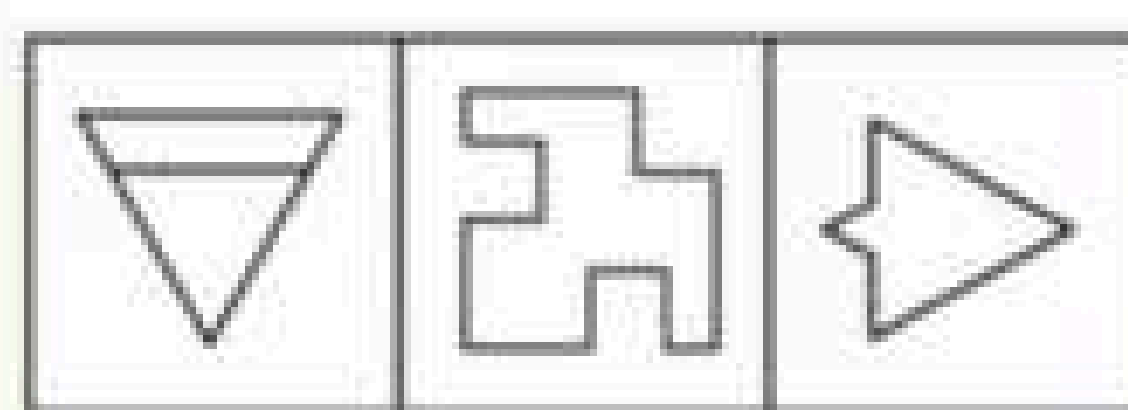
⑤

⑥

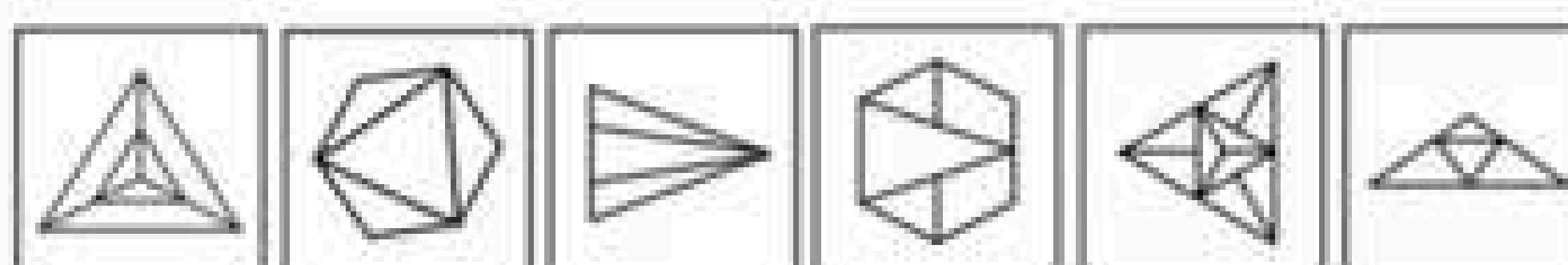
注意①⑥中间的阴影部分是否对称!

细化考法(5个)

1. 一条对称轴 → 优先对称轴方向

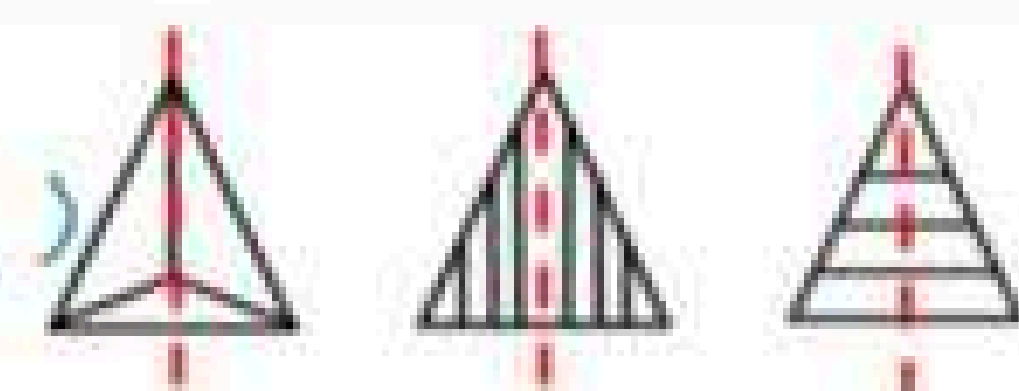


2. 多条对称轴 → 优先对称轴数量

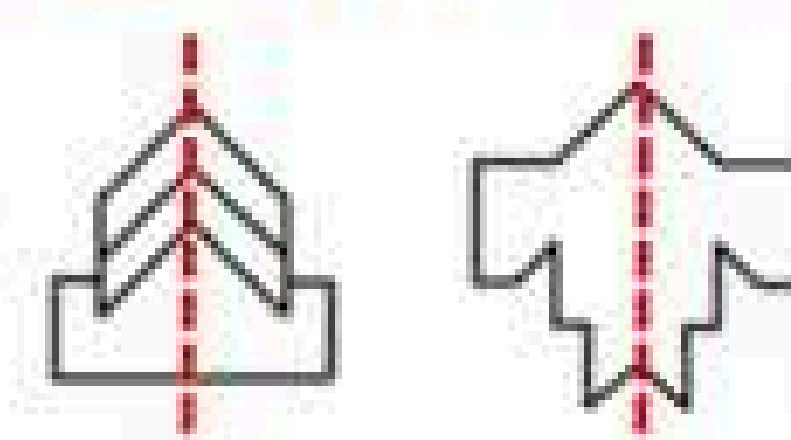


3. 方向和数量没答案 → 对称轴与原图形的关系

与线的关系(重合, 平行, 垂直)

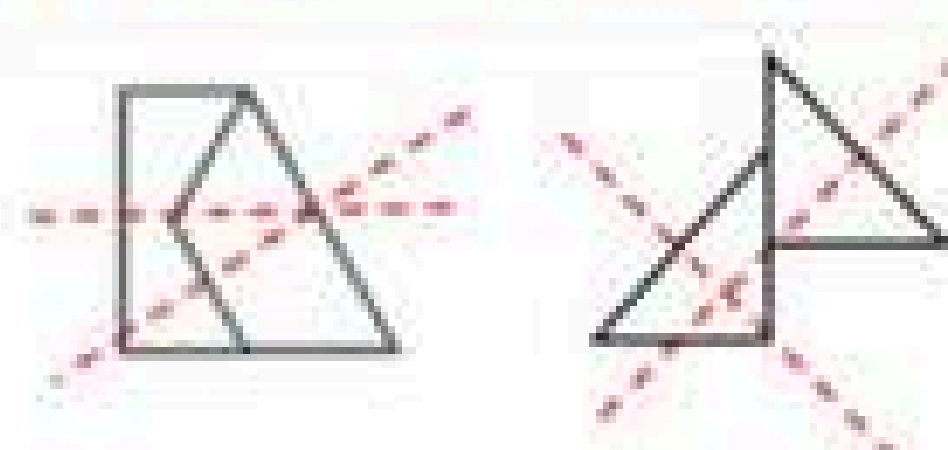


与面, 点关系



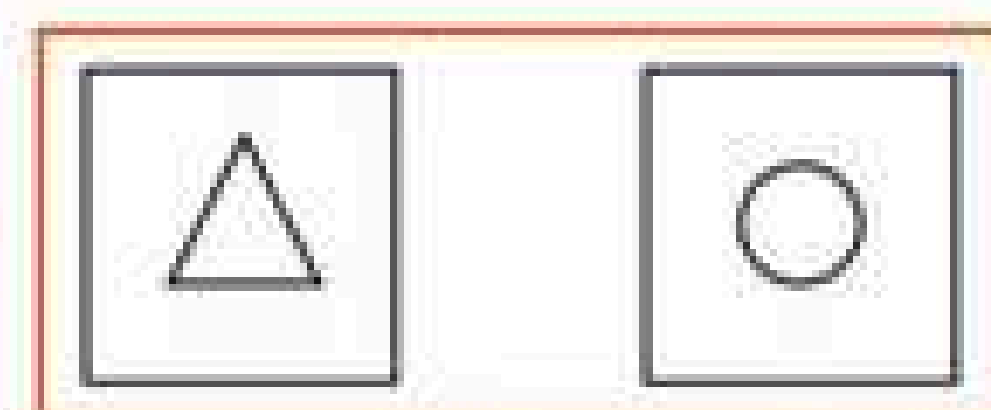
4. 2-3个规则图形挨着 → 考虑拆分

(对称轴之间的位置关系: 平行、垂直、相交)



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5. 两个规则图形内外 → 考虑拆分(识别、运算)

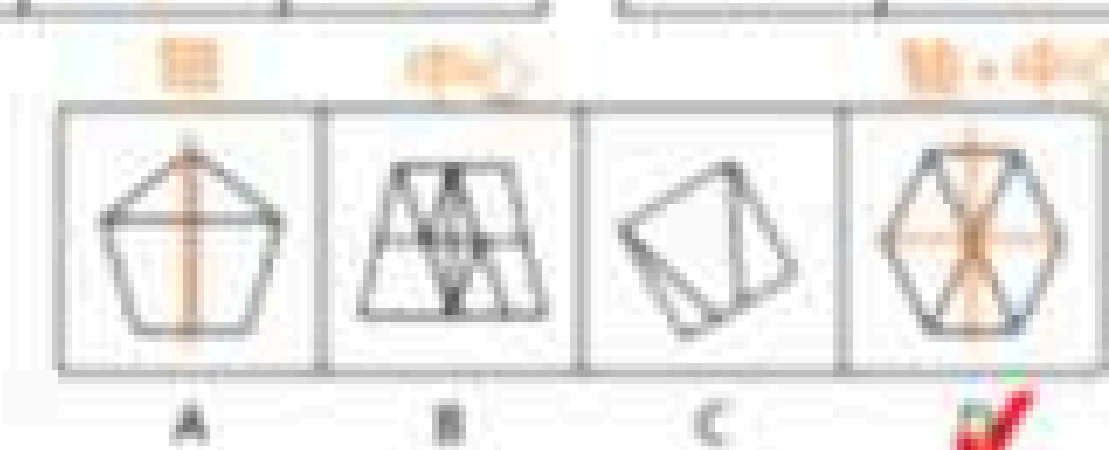
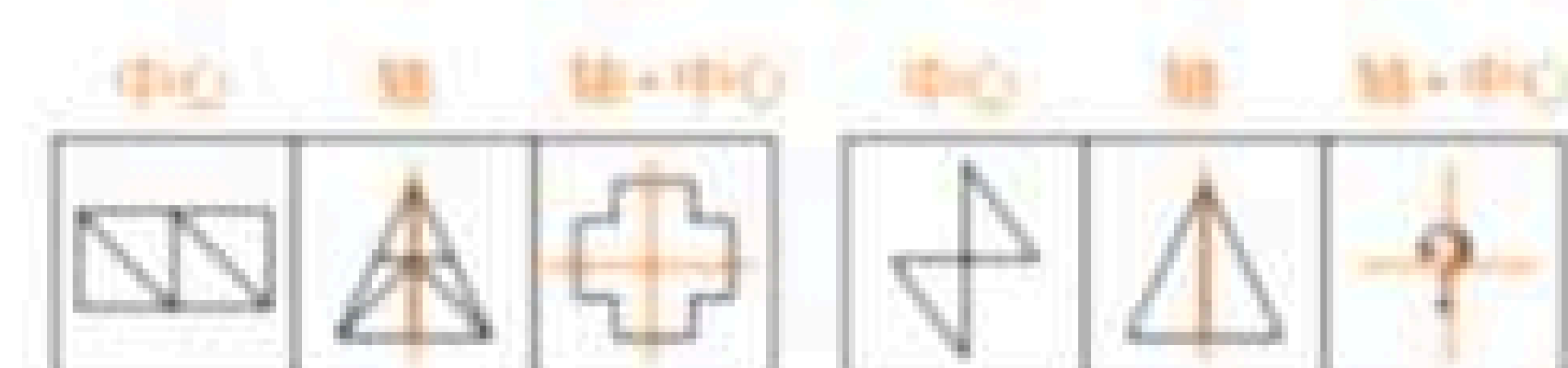


识别: 内外分开看

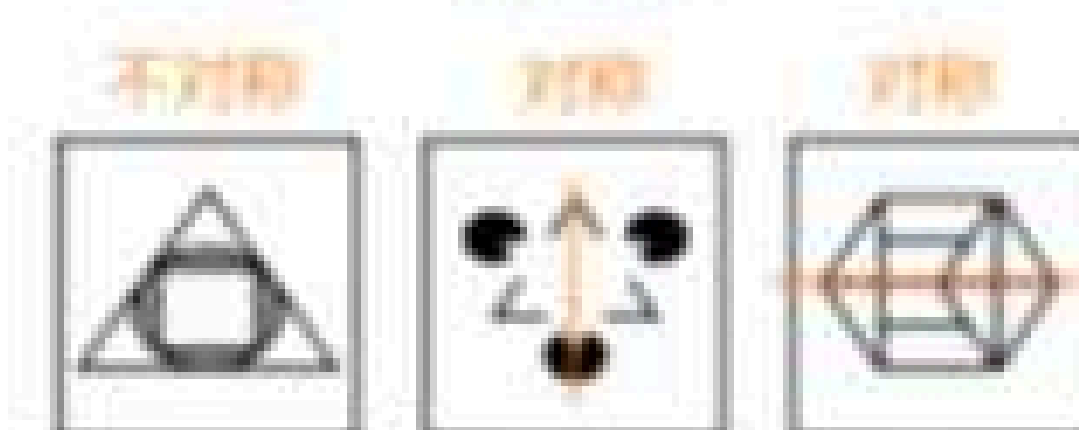


运算: 外-内=4-3=1

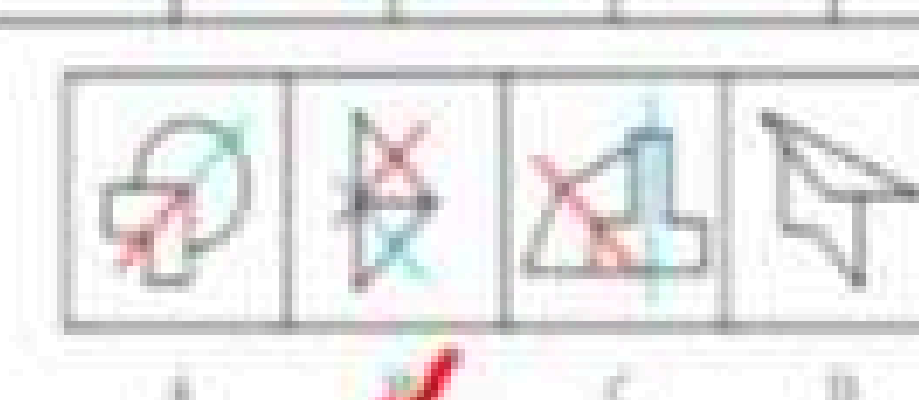
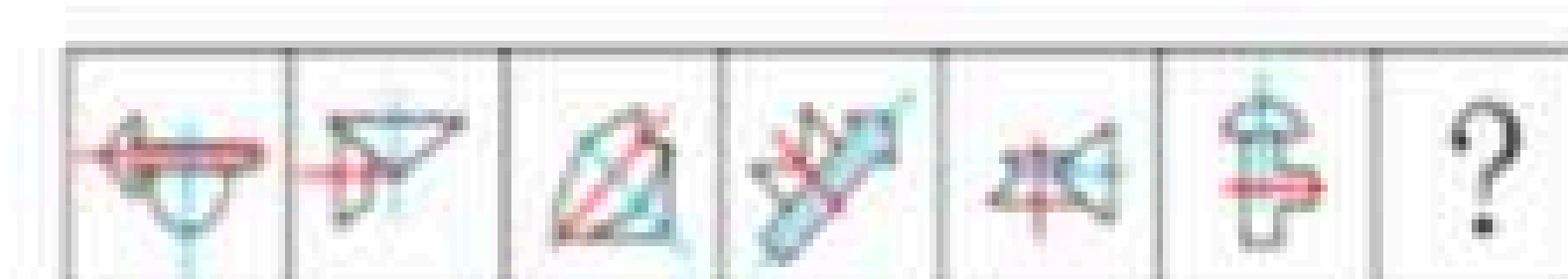
➤ 对称轴-基础小结



➤ 识别



➤ 细节挖坑



➤ 对称轴之间位置关系

实战思维

规则, 美观 — 对称性 — 先识别 — 后细化

1条对称—方向

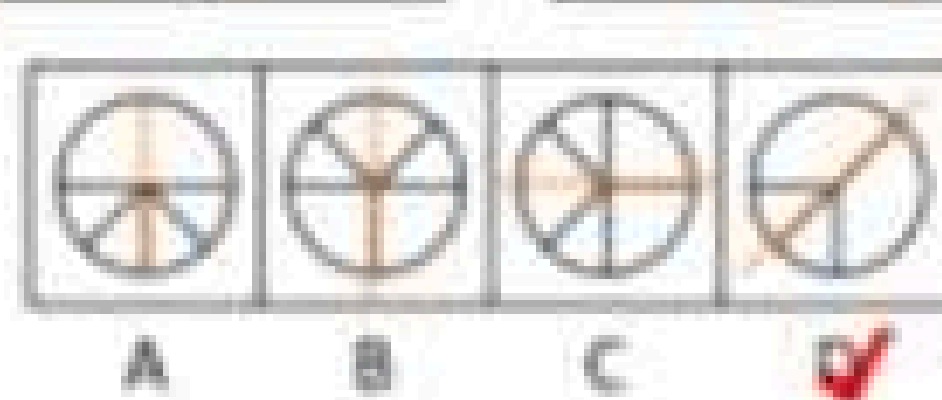
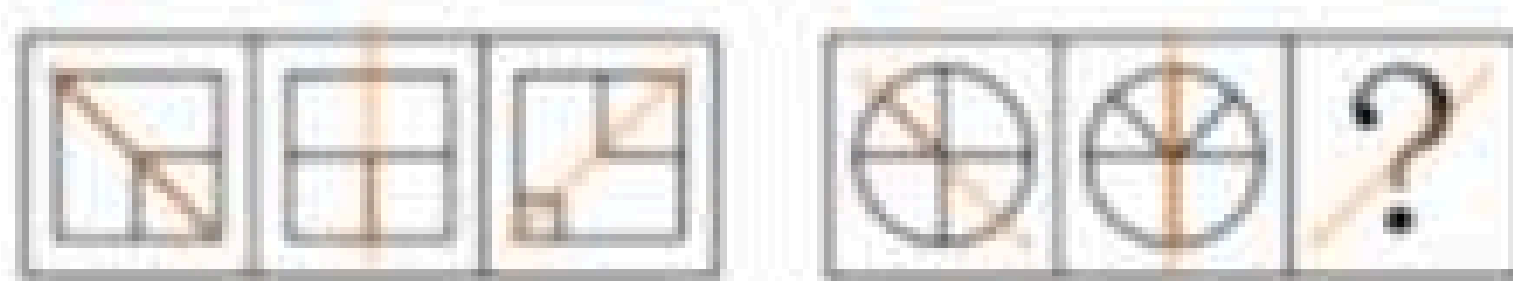
多条对称—数量

多个规则图形

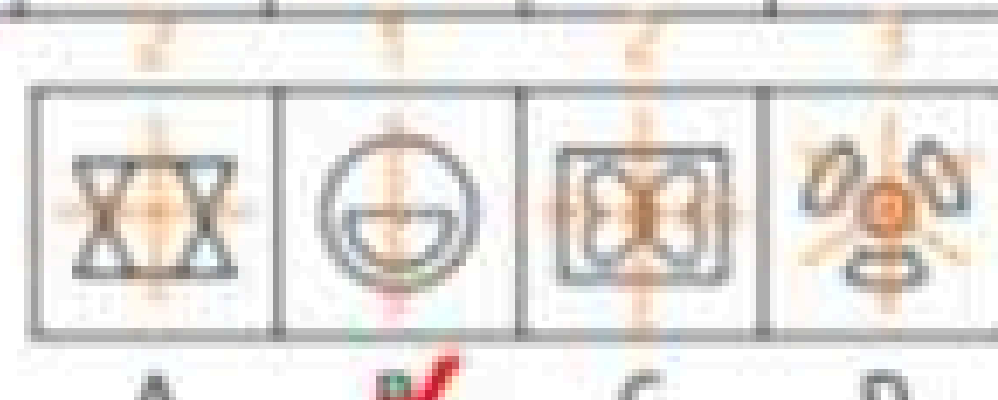
与原图形①线②面③点的关系

挨着 — 平行、垂直、相交

内外 — 识别、运算



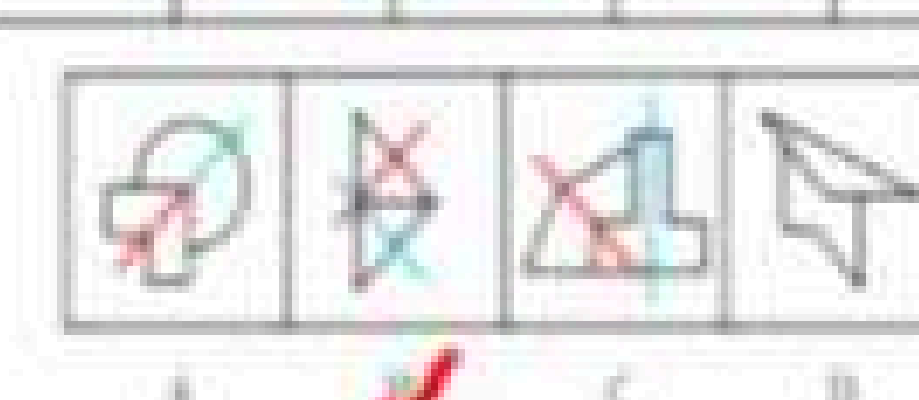
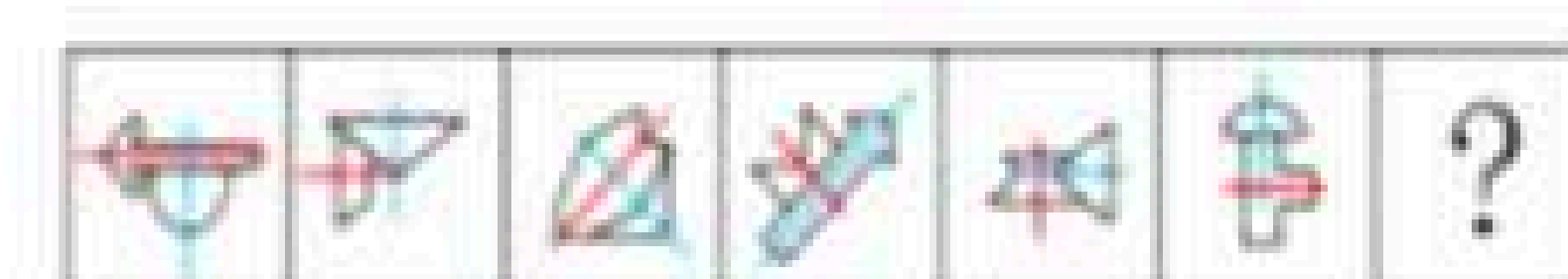
➤ 对称轴方向



➤ 对称轴数量



➤ 内外拆分-识别



破解出题者“小心思”

1.对称性【高频】

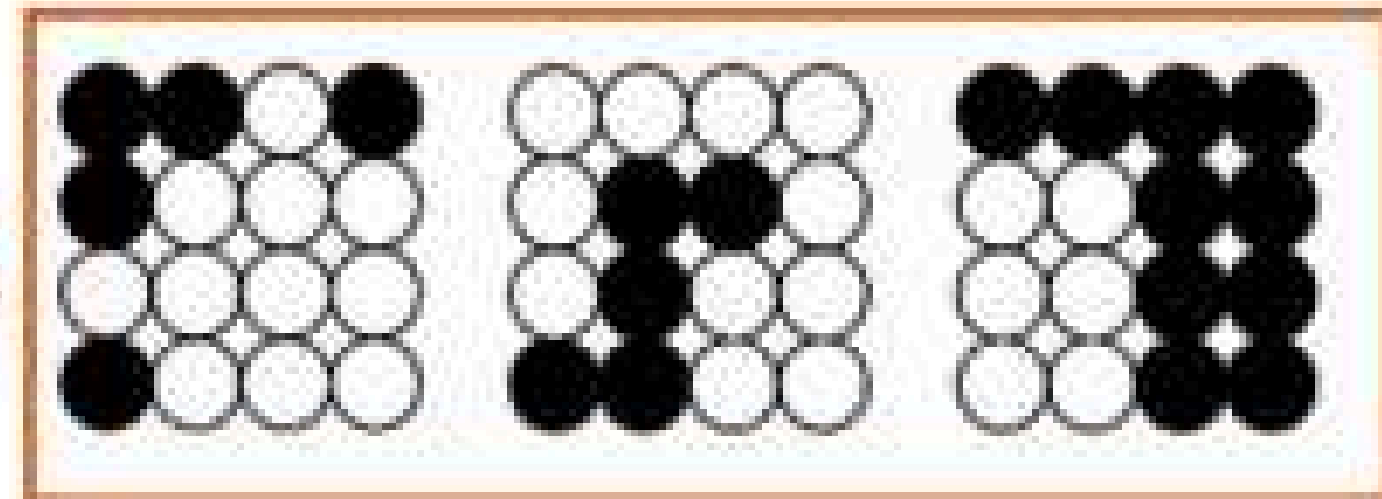
对称性（拔高）



来源于小红书@贝栗子

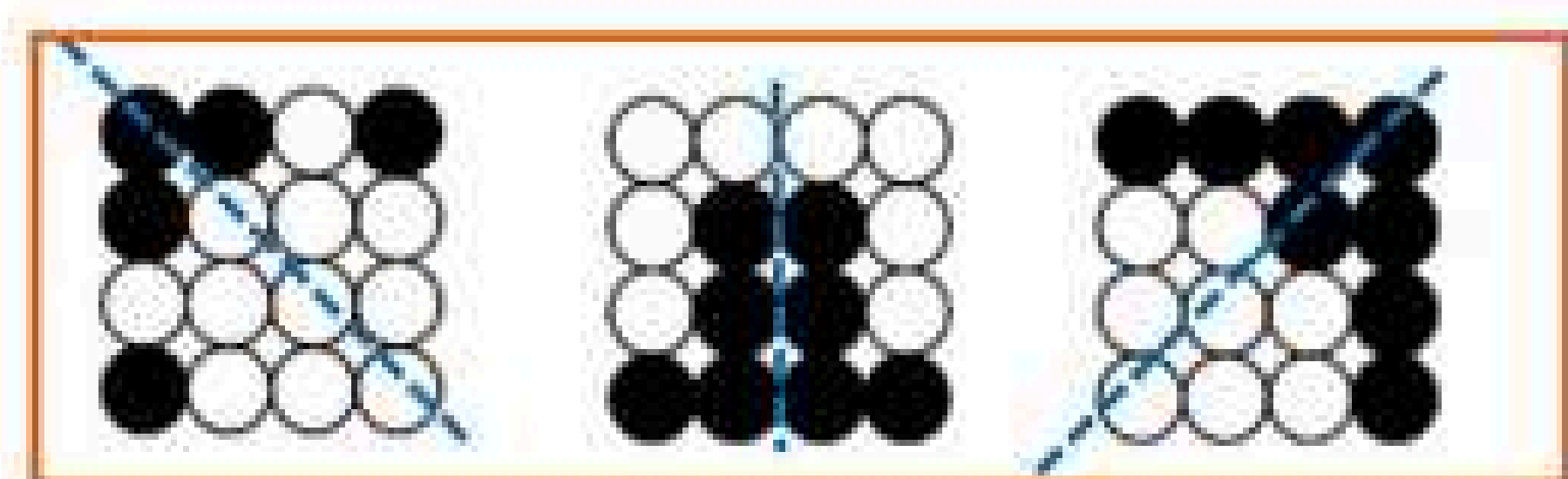
加密：

先识别：1. 整体对称 2. 仅黑色对称 3. 仅白色对称

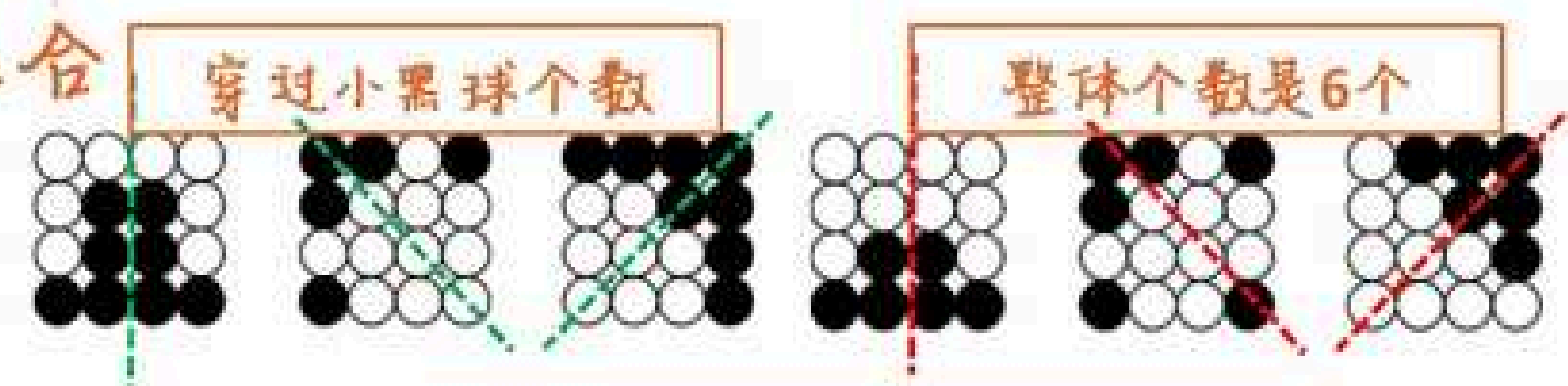


后细化：

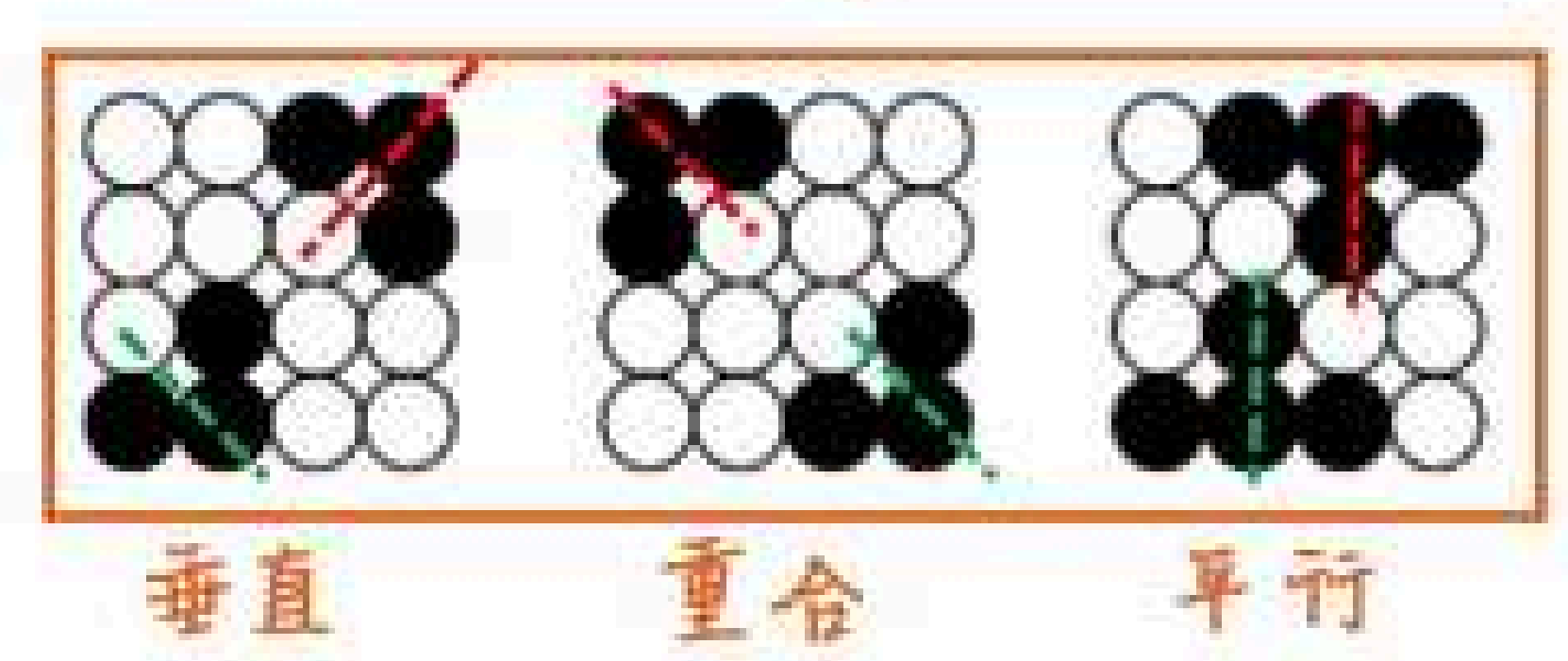
①一条对称轴，优先对称轴方向



②方向没答案，考虑与黑球个数的结合
(穿过小黑球个数或整体个数)



③多个规则图形，考虑对称轴之间的位置关系
(平行、垂直、重合)



小红书：@贝栗子

加密：

解密：拆分思想(局部特征)



增加“无用面”

➤ 对称轴-拔高小结



均为中心对称

➤ 白色对称-识别

➤ 黑白交替+对称轴方向

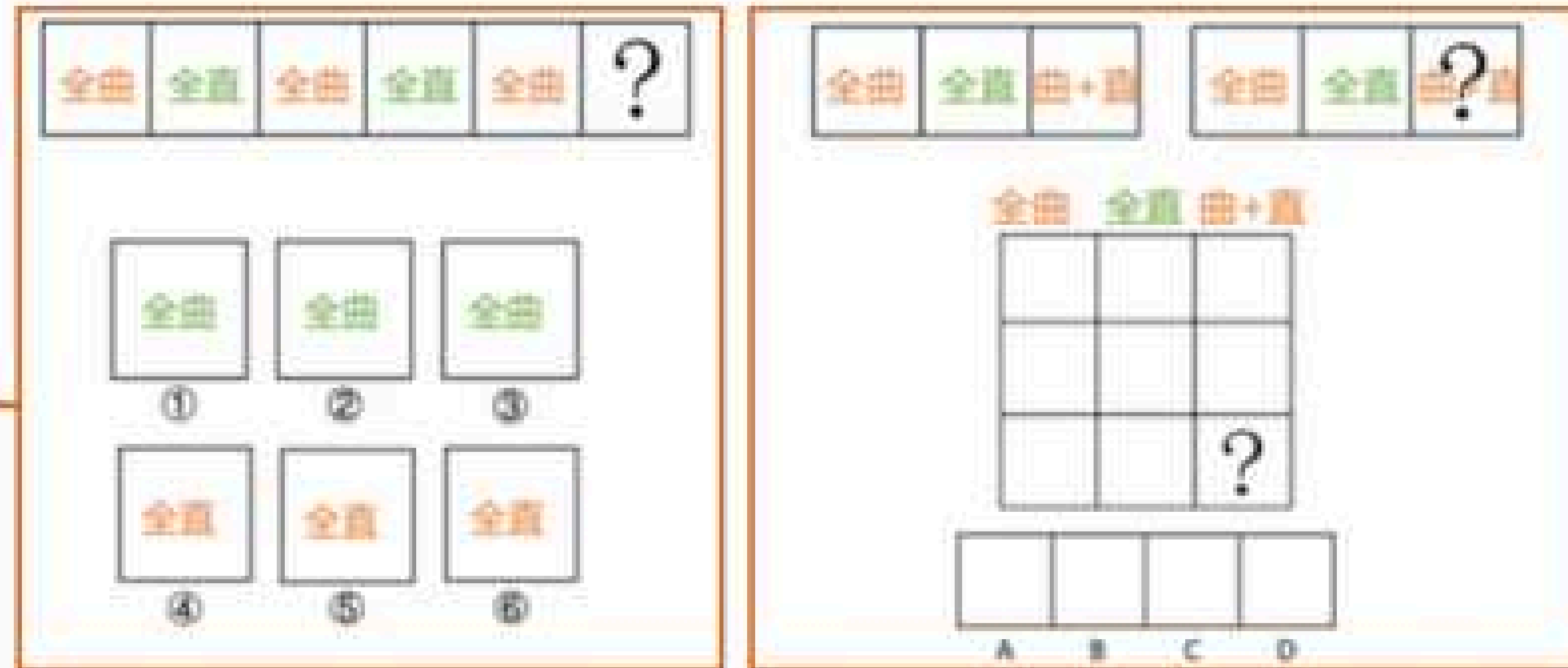
➤ 对称轴穿过小黑球个数

➤ 对称轴之间位置关系

2.曲直性

每幅图图案不同, 出现曲线(1/2, 2/3)

作图特点



解题思路

每幅图图案不同 → 1/2, 2/3 曲线 → 曲直性

基础考法



高频区分

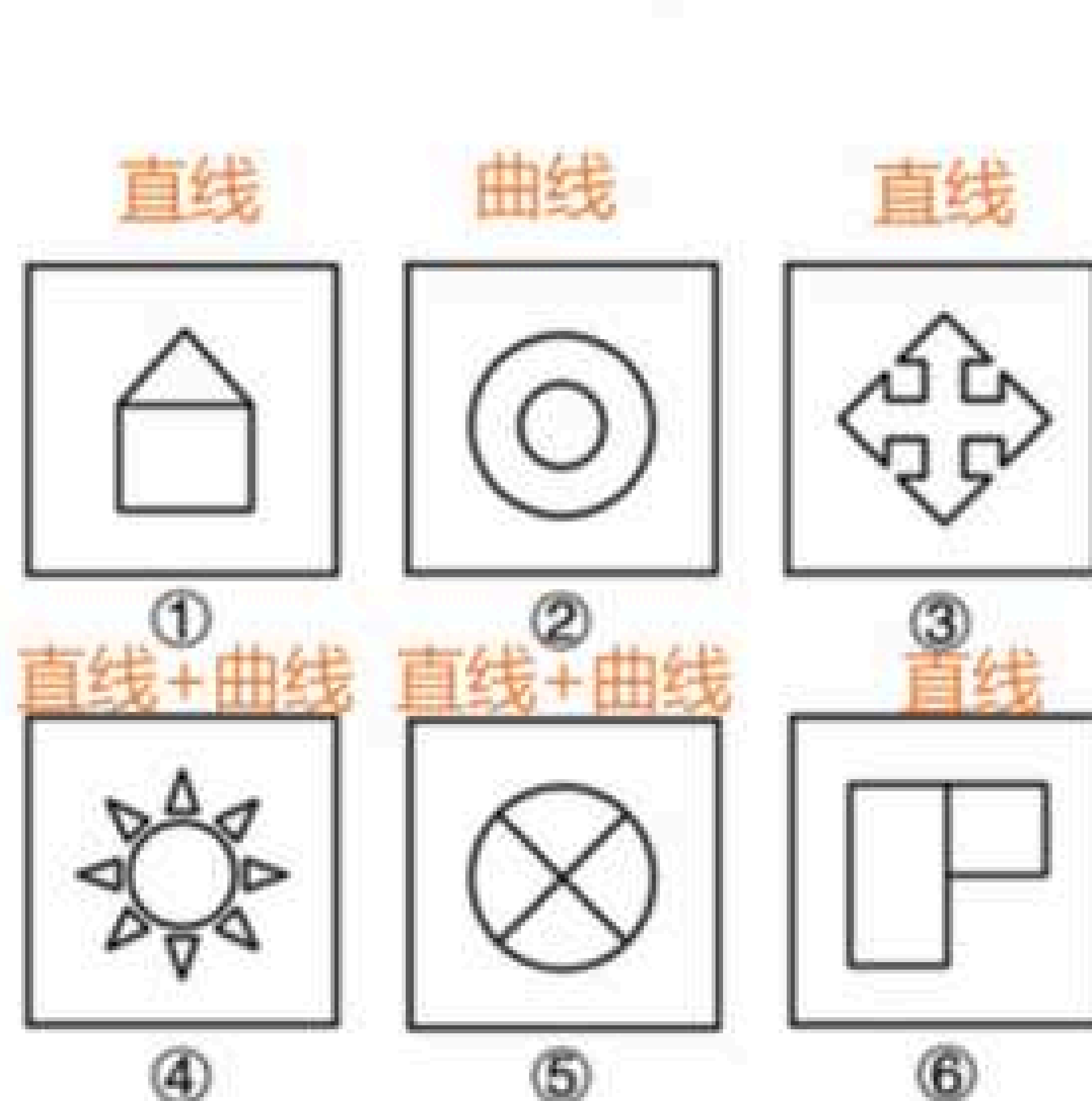
“全直线”与“曲线+直线”

实战思维

小红书：@贝栗子



➤ 曲直性-小结



➤ 1/2 曲线 → 曲直性

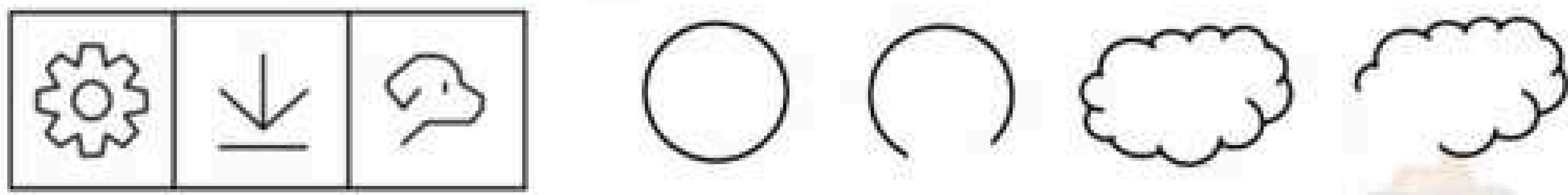


➤ 2/3 曲线 → 曲直性

3. 开闭性

作图特点

生活化图形, 或明显缺口



解题思路

每幅图图案不同 → 生活化 → 开闭性

基础考法

区分(全开放、全封闭、半开放半封闭)



小红书: @贝栗子

➤ 开闭性-小结



➤ 生活化 → 开闭性

【本节总结】

- ①命题者作图特点：每幅图**图案不一样**
- ②考点：1.**属性**2.**数量**3.**图形关系**
- ③宏观思维：
 - 1.先**属性**，后**数量**，且属性规律中的**对称性**优先级最高
 - 2.**背诵**数量规律中**图形特征**，直接定位
 - 3.**极端情况**，优先考虑“图形关系”

【属性规律】命题者作图特点：

- 1.对称性（特征：**规则**）
- 2.曲直性（特征：**曲线**）
- 3.开闭性（特征：**生活化**）

【对称性】①命题者作图特点：**规则、美观**

②考点：先**识别**，后**细化**

（一）先识别

1.轴对称（含义：图形沿着一条直线折叠后，直线两边的部分能够完全重合）

特征图：**“等腰”图形**

2.中心对称（含义：图形旋转 180°后和原图形完全重合）

特征图：**平行四边形，“S”“N”“Z”及其变形图、相同图形反着放**

3.轴对称 + 中心对称

特征图：**有两条相互垂直的对称轴的图形**

（二）后细化

- 1.一条对称轴，优先**对称轴方向**
- 2.多条对称轴，优先**对称轴数量**
- 3.**方向和数量**没答案，考虑对称轴与原图形“**线面点**”的关系
- 4.**多个规则图形**，考虑**对称轴之间的位置关系**或**识别**

【对称性-黑白块】①命题者作图特点：**黑白块分布规则**

②考点：先**识别**，后**细化**

（一）先识别

1.**黑白块整体**对称2.**仅黑色**对称3.**仅白色**对称

（二）后细化

- 1.一条对称轴，优先**对称轴方向**
- 2.**方向**没答案，考虑与**黑球个数**的结合（穿过**小黑球个数**或**整体个数**）
- 3.**多个规则图形**，考虑**对称轴之间的位置关系**

【曲直性】①命题者作图特点：**1/2或2/3曲线**

②考点：区分**全直线、全曲线、曲线+直线**

③特殊情况：**有无曲线**，也能分类



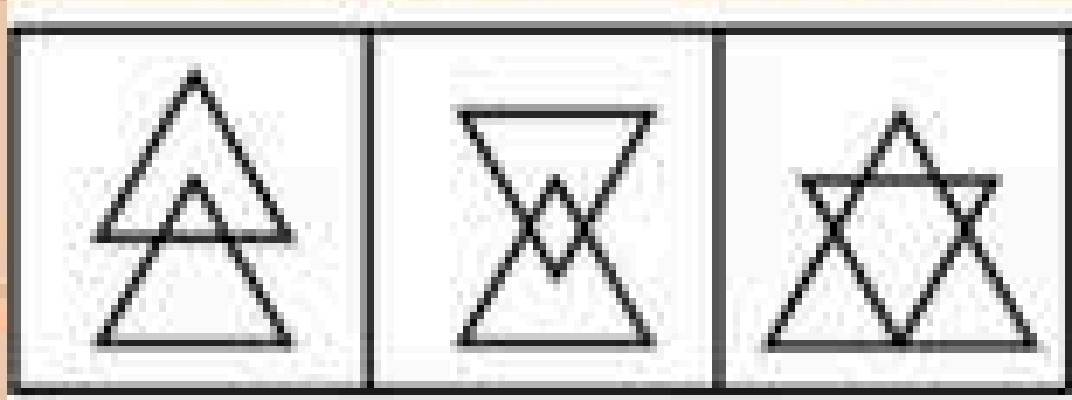
➤ 理论速记

➤ 理论速记

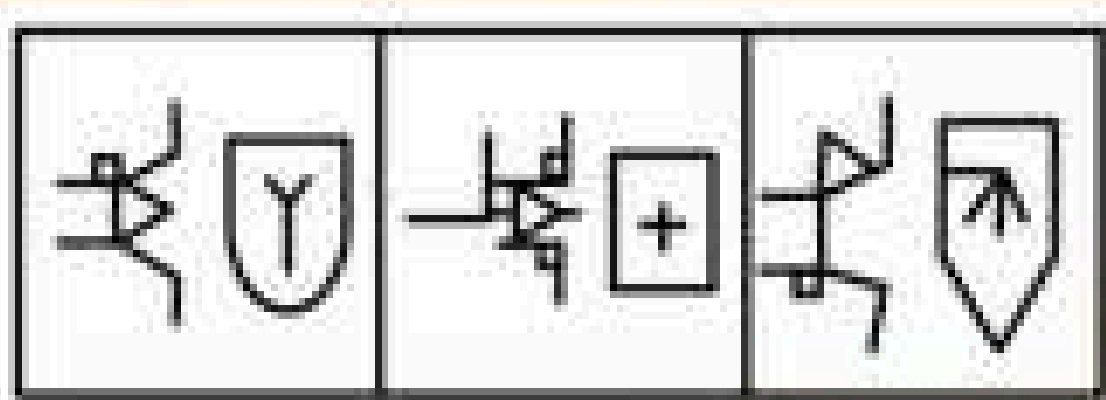
4.图形间关系

作图特点

极端情况(特别简单、复杂)

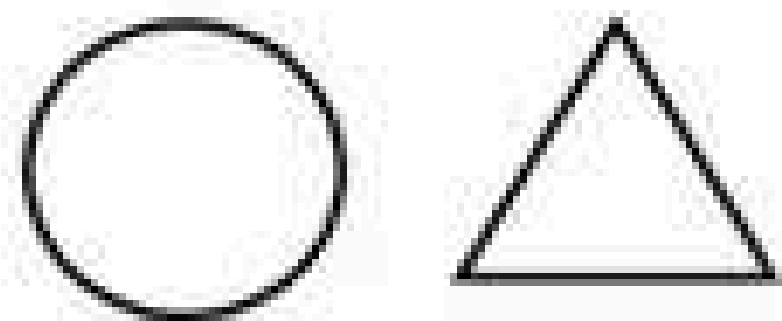


> 作图“过于简单”



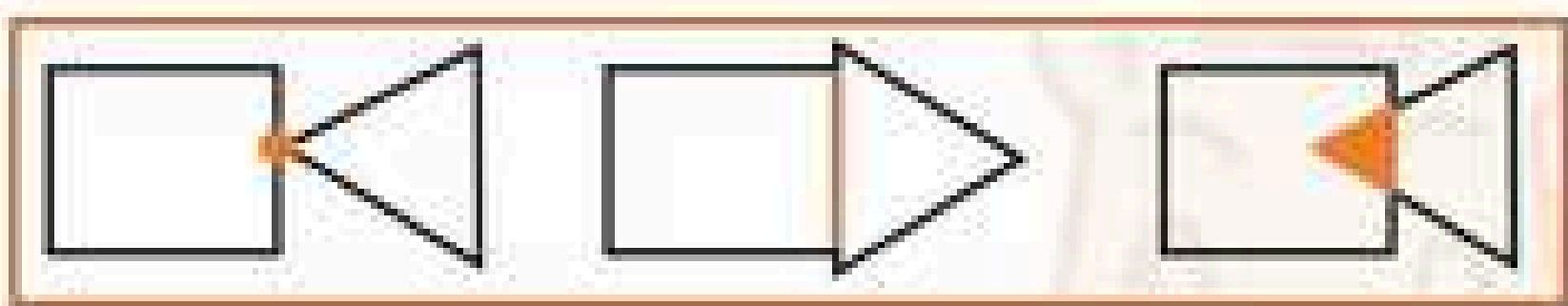
> 作图“过于复杂”

特别简单

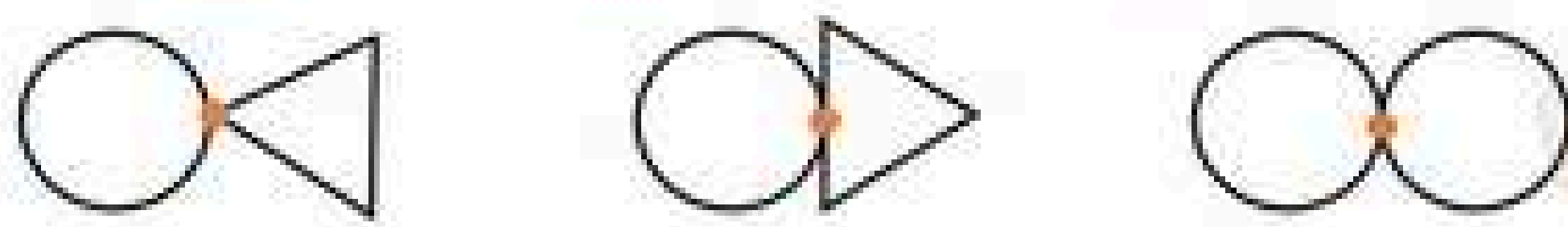
1. 相离 

2. 包含 

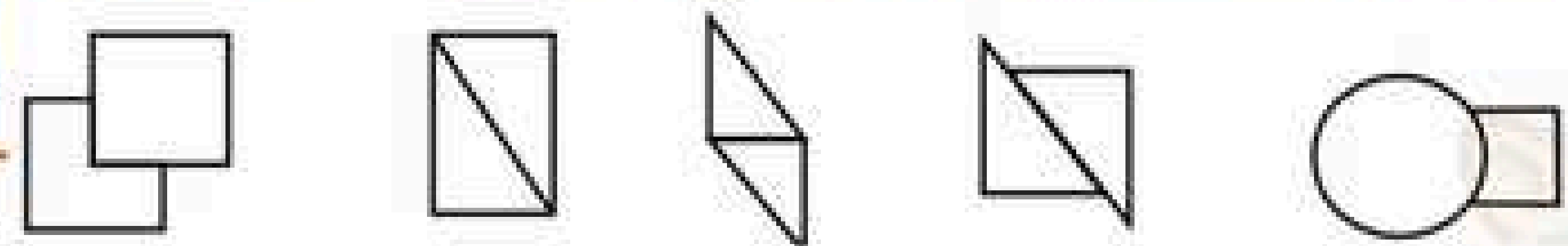
3. 相交

通过“连接处”来区分 

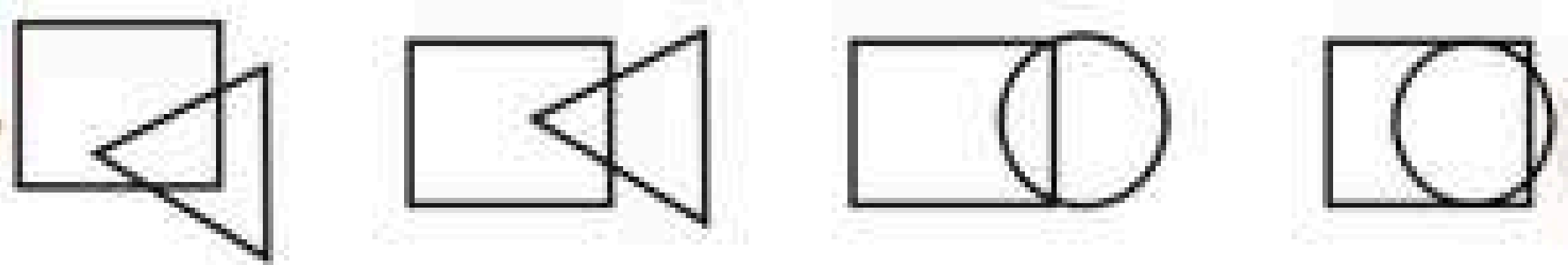
(1) 相交于点 { 考查方式: ①区分“交点”“切点” ②曲直性



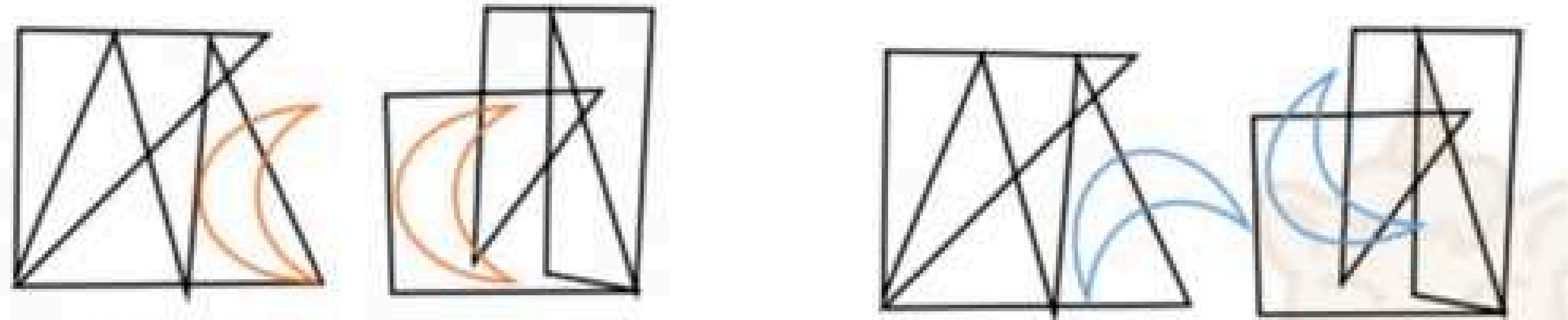
(2) 相交于边 { 考查方式: ①数量 ②特点: 1.最长/最短 2.整体/局部 3.曲线/直线



(3) 相交于面 { 考查方式: ①形状(自身,外框) ②属性(对称,曲直) ③面积(1/2)



特别复杂



局部出头 全部里面 =1/2相交面 >1/2相交面

考查方式: 共同图案+复杂图案 → 两者之间的位置关系

实战思维

图形间位置

简单: 2~4个图案

复杂: 共同图案+复杂图案

相离/包含

相交

点 — 切点/交点、曲直性

线 — 数量、长/短、整体/局部、曲线/直线、线的位置

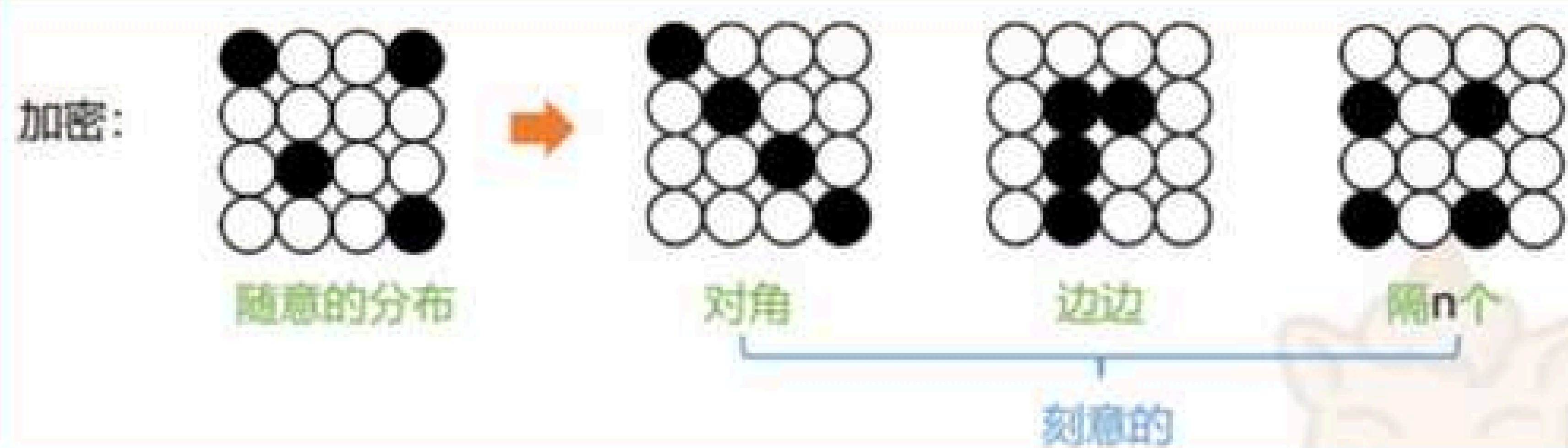
面 — 形状、属性、面积

考虑两者之间位置关系

破解出题者“小心思”

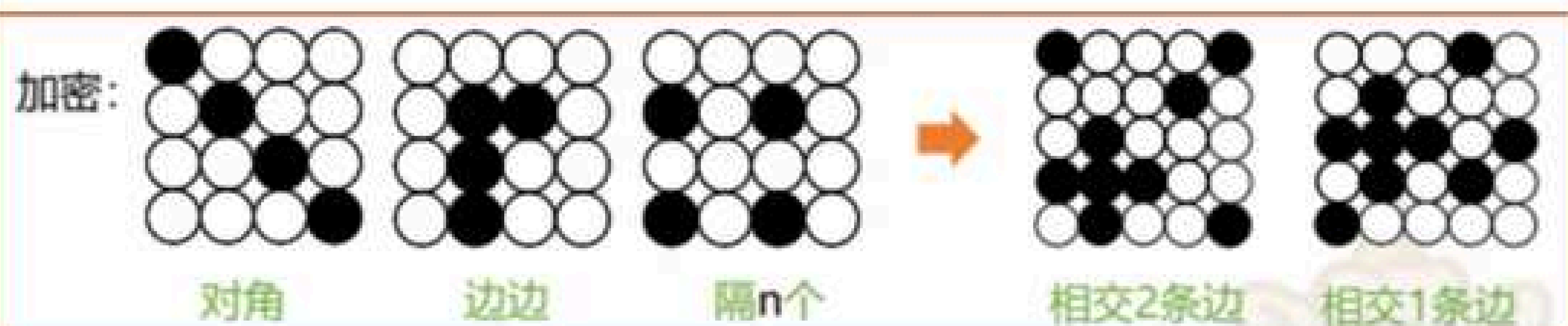
4.图形间关系

加密1



黑白块

解密:作图简单(个数较少)→ 刻意的“对角、边边、隔n个”

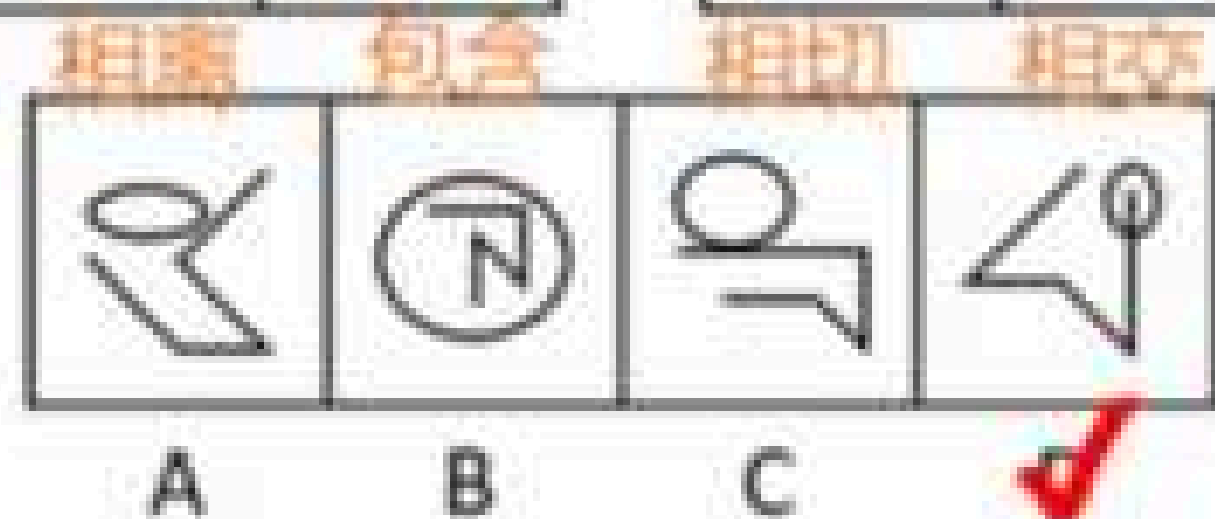
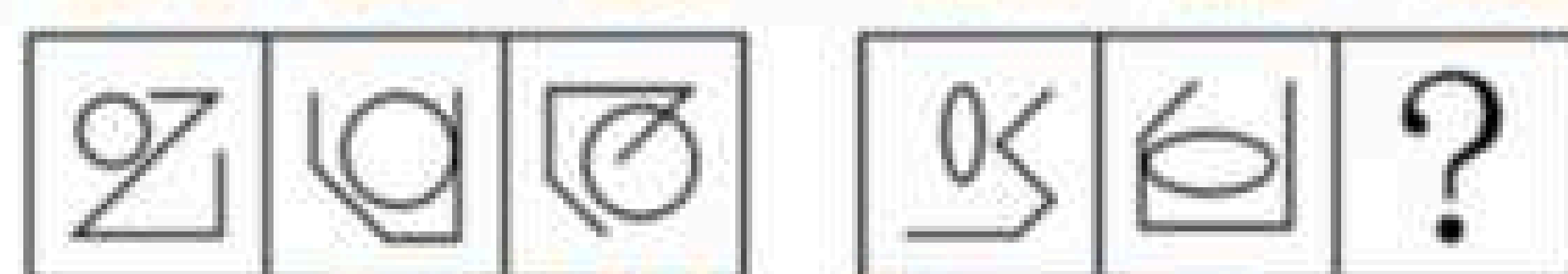


解密:作图复杂(个数较多)→考虑跟“外框”的关系

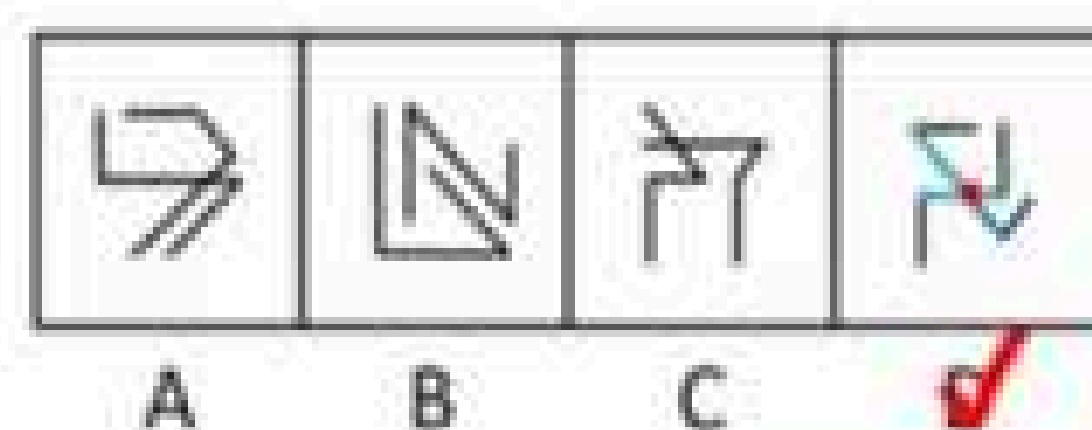
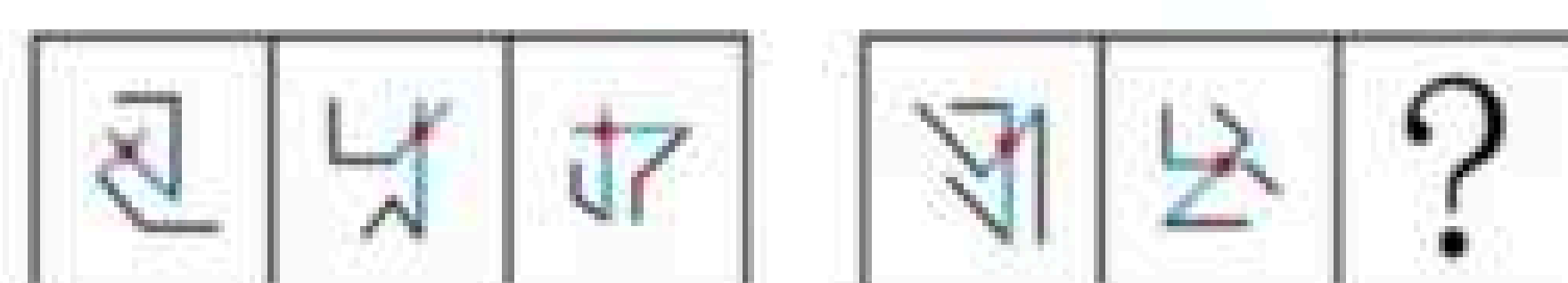
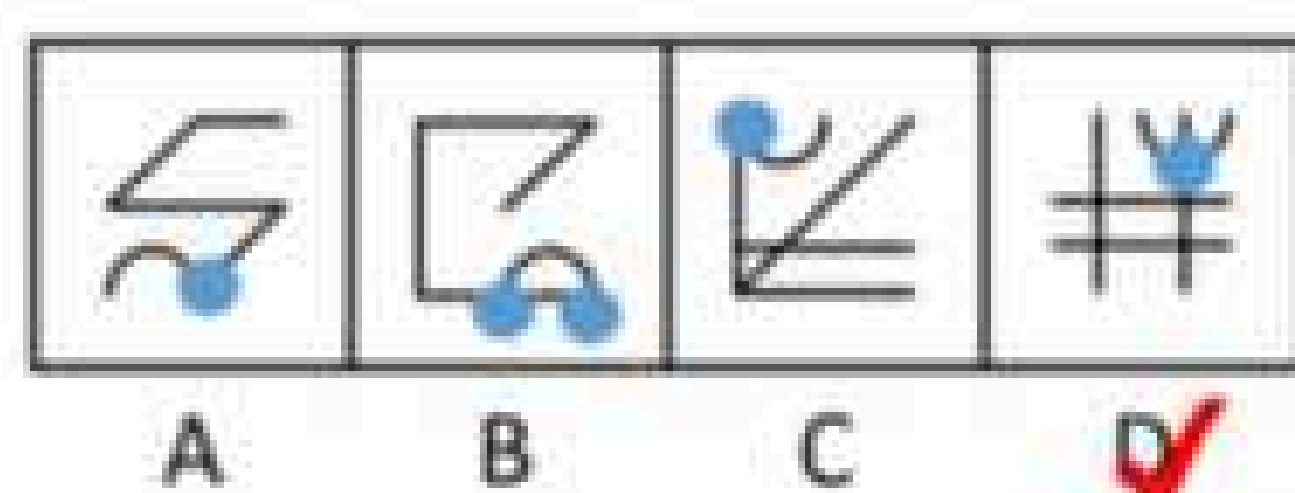
加密2

◆ 破解出题者“小心思”

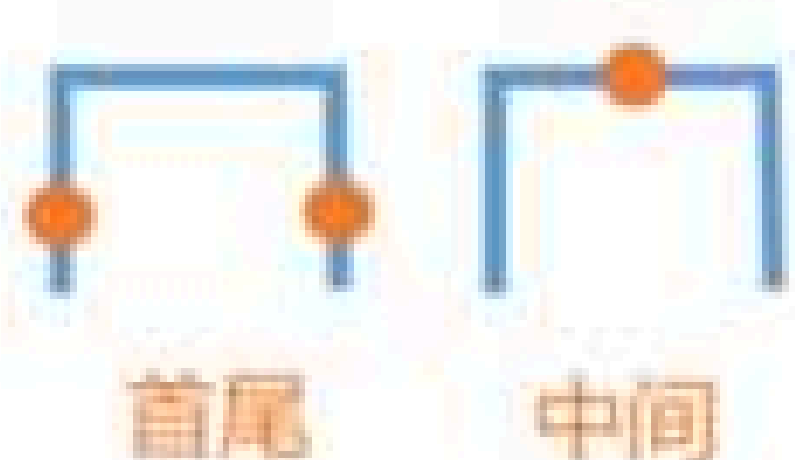
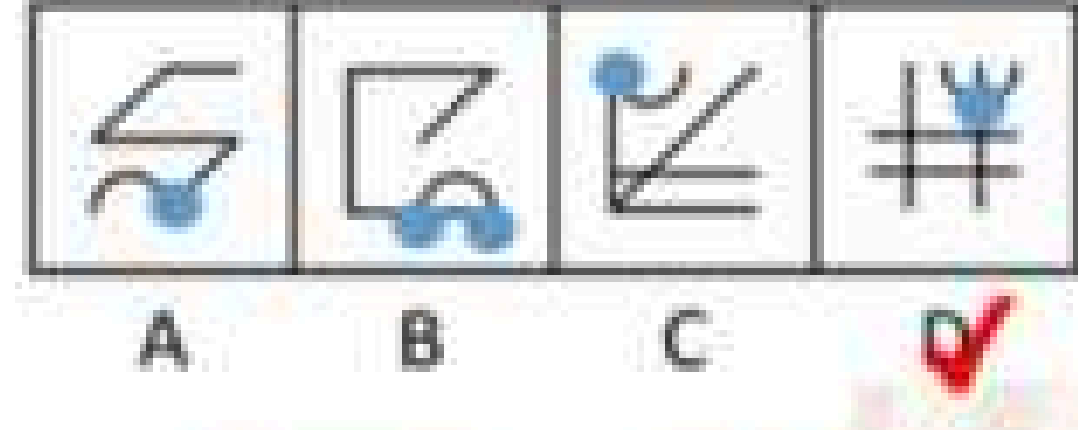
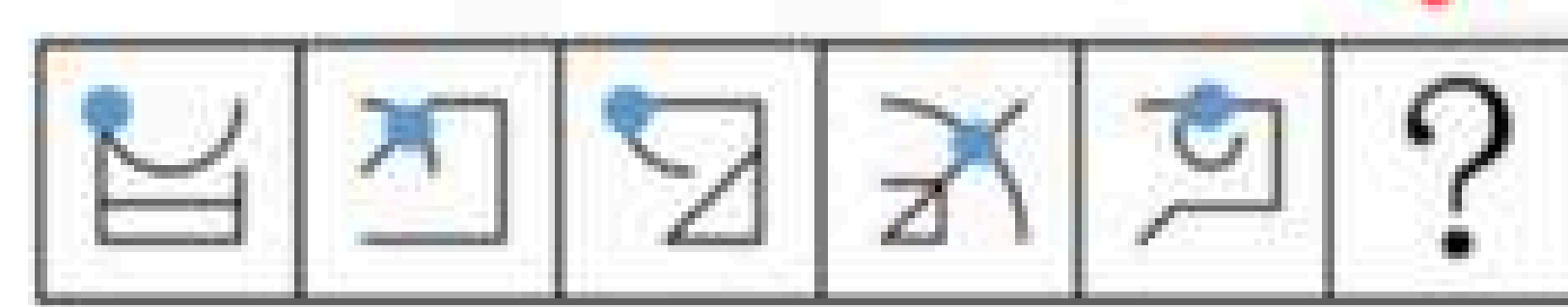
相离 相切 相交 相离 相切 相交



VS



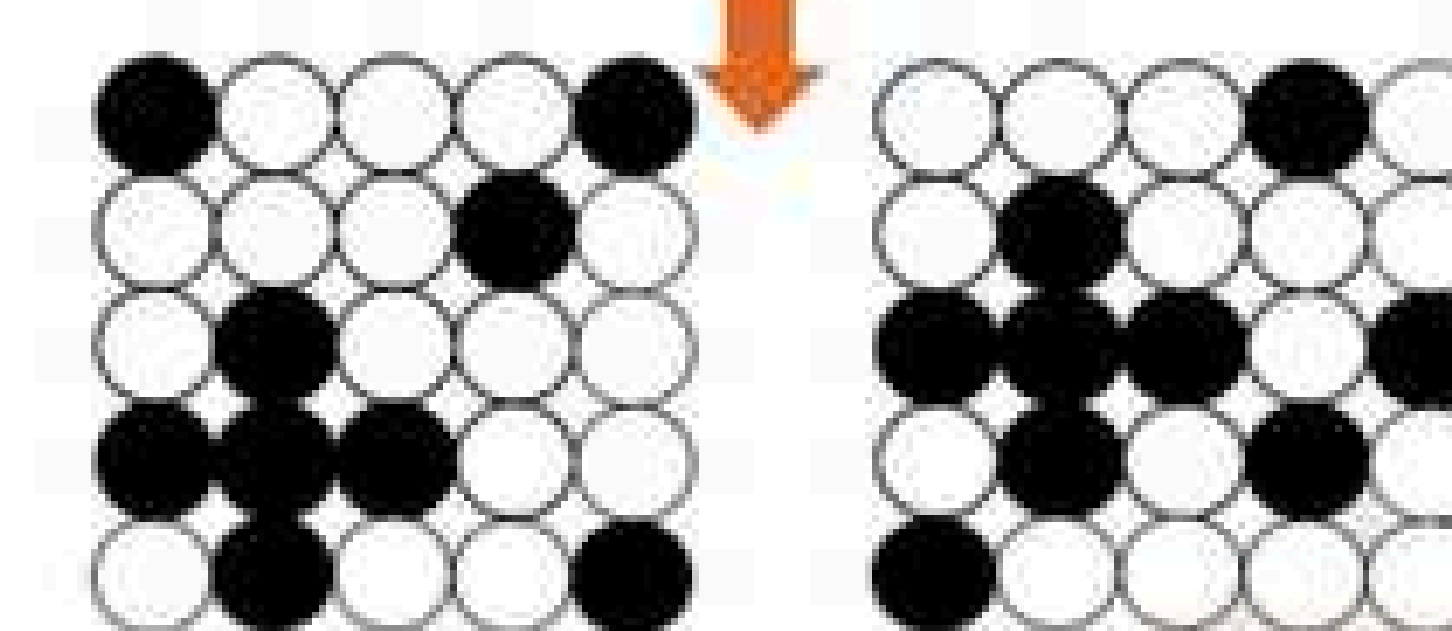
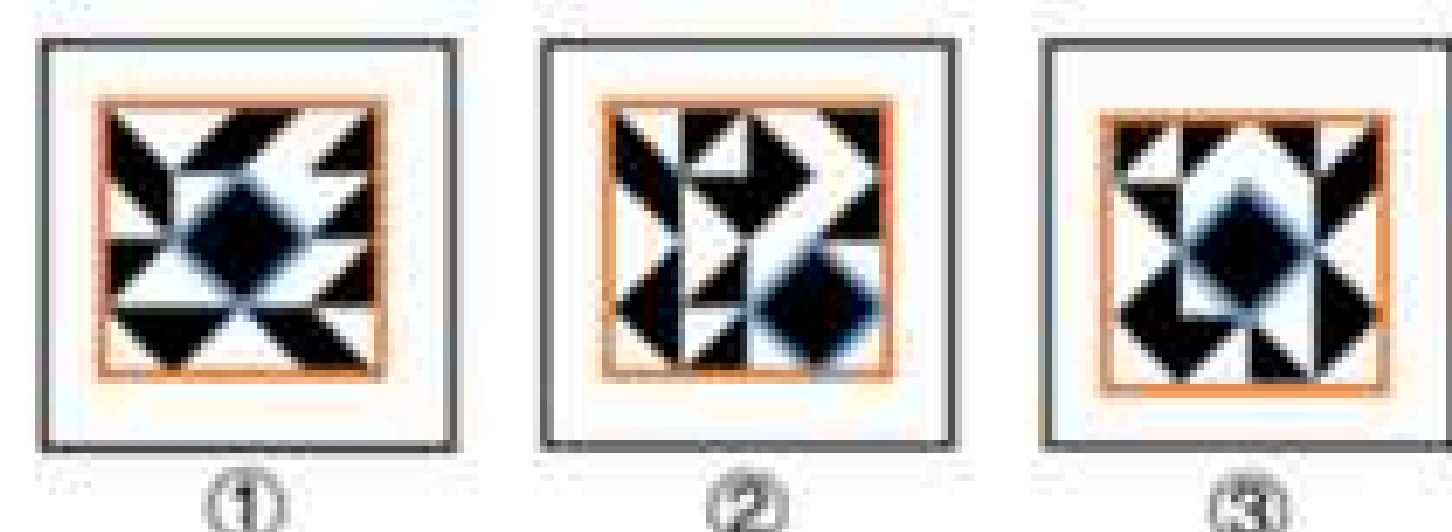
VS



首尾 中间



首尾 中间



相交2条边

相交1条边

核心思路:与外框的关系

➤ 1黑+多白-小结

图形关系

特征: ① 简单 ② 复杂 ③ 1黑+多白

①黑面

与外框的关系

相交于几条线

②白面

白面之间的位置关系

③黑面与白面

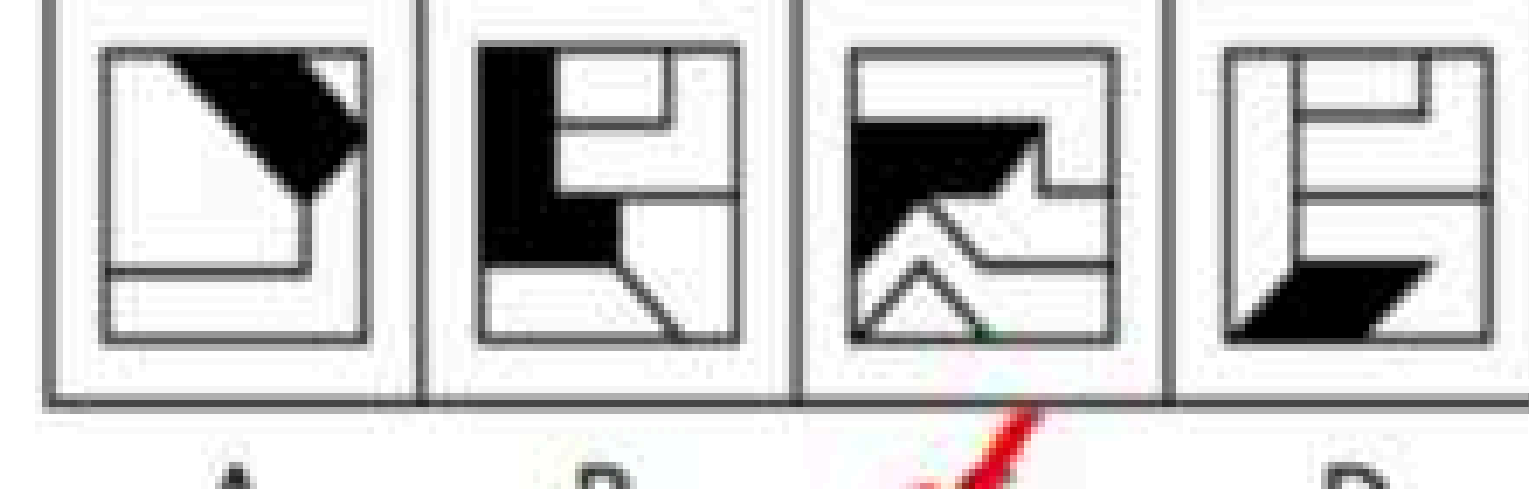
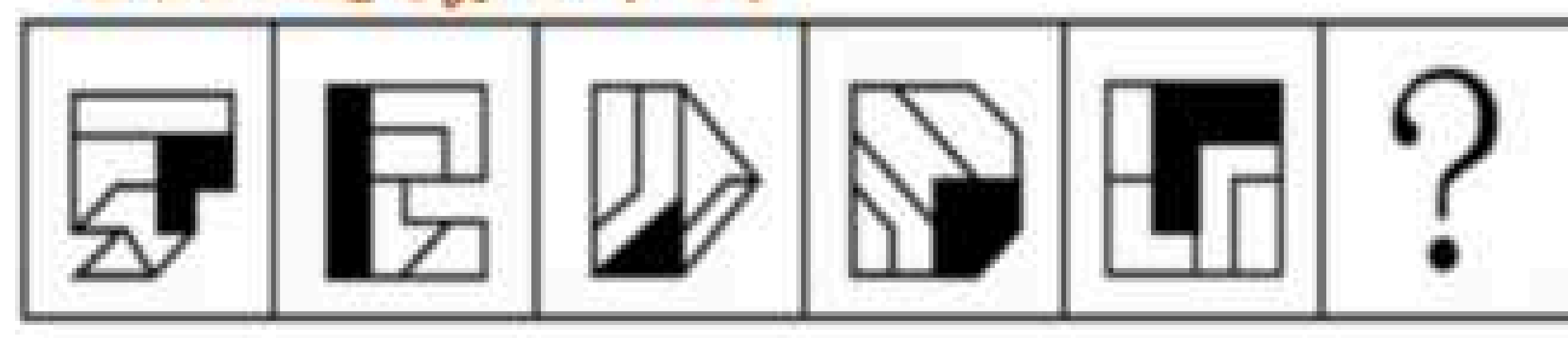
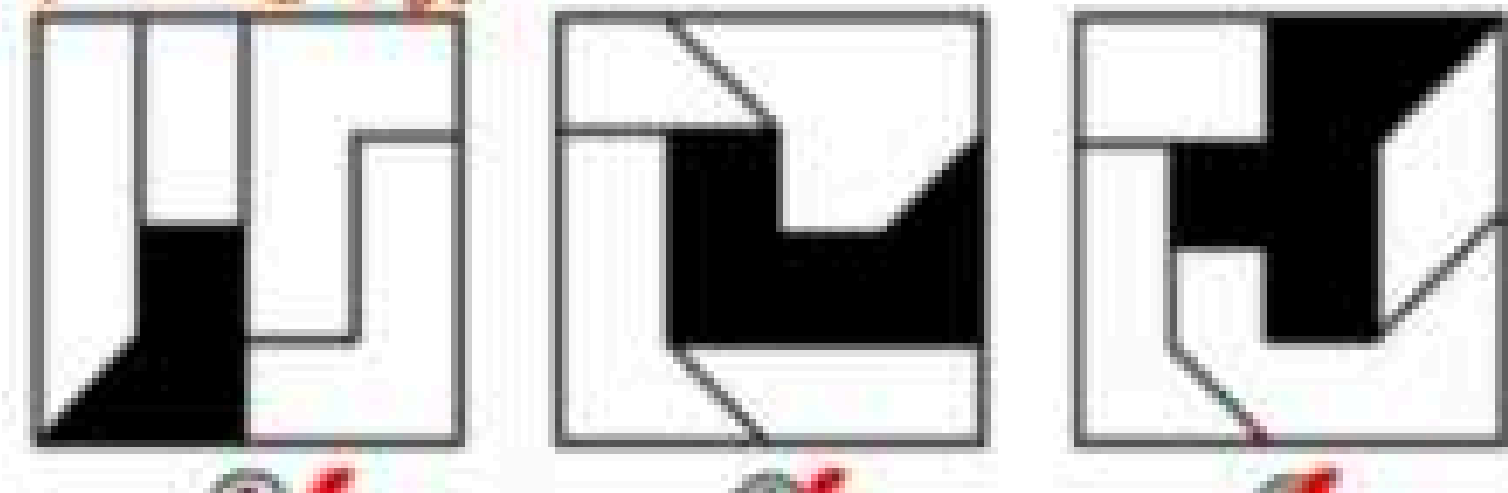
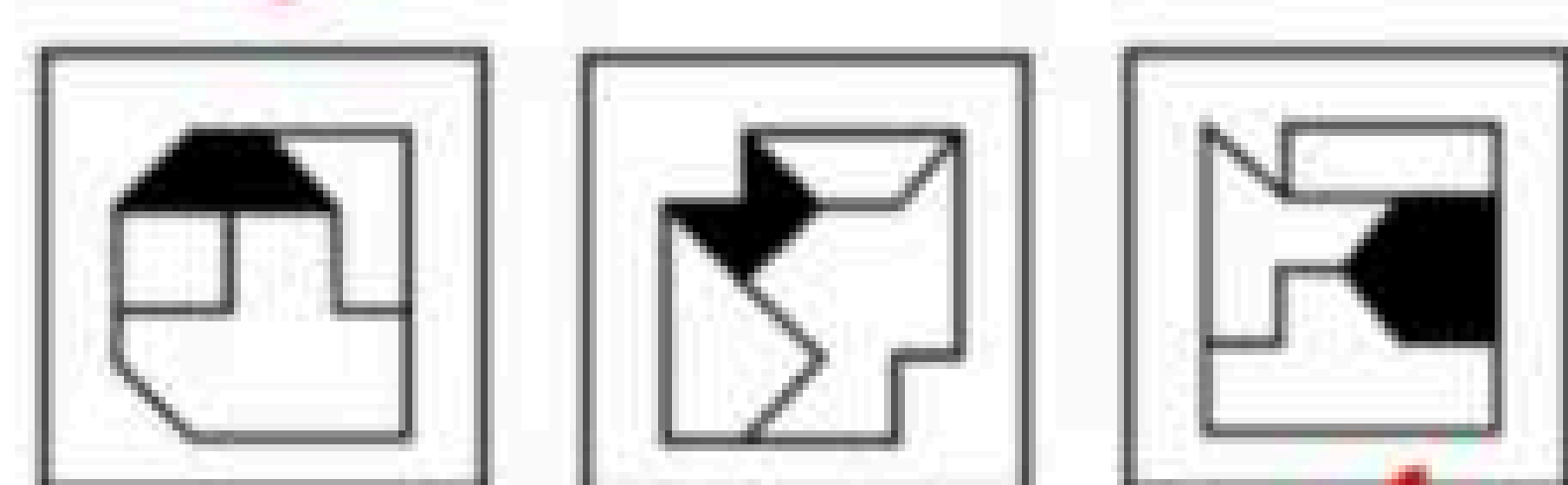
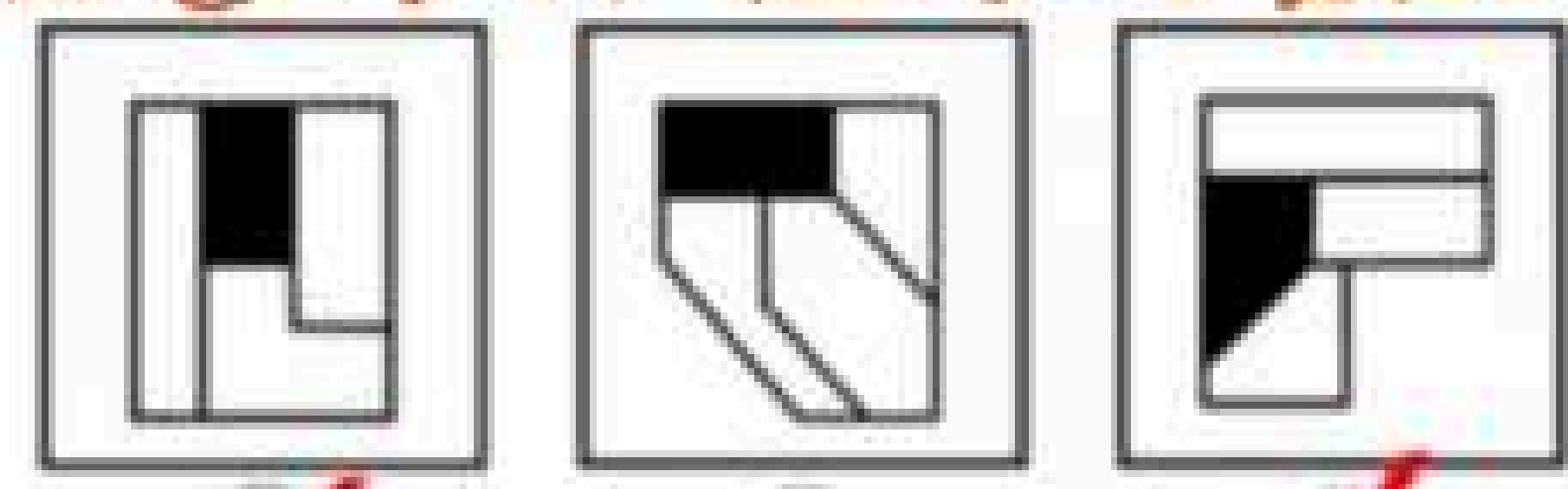
有几个白面跟黑面连一起

相交于几条线

黑色与外框的边数1或2

4个连接

1黑连接4个白



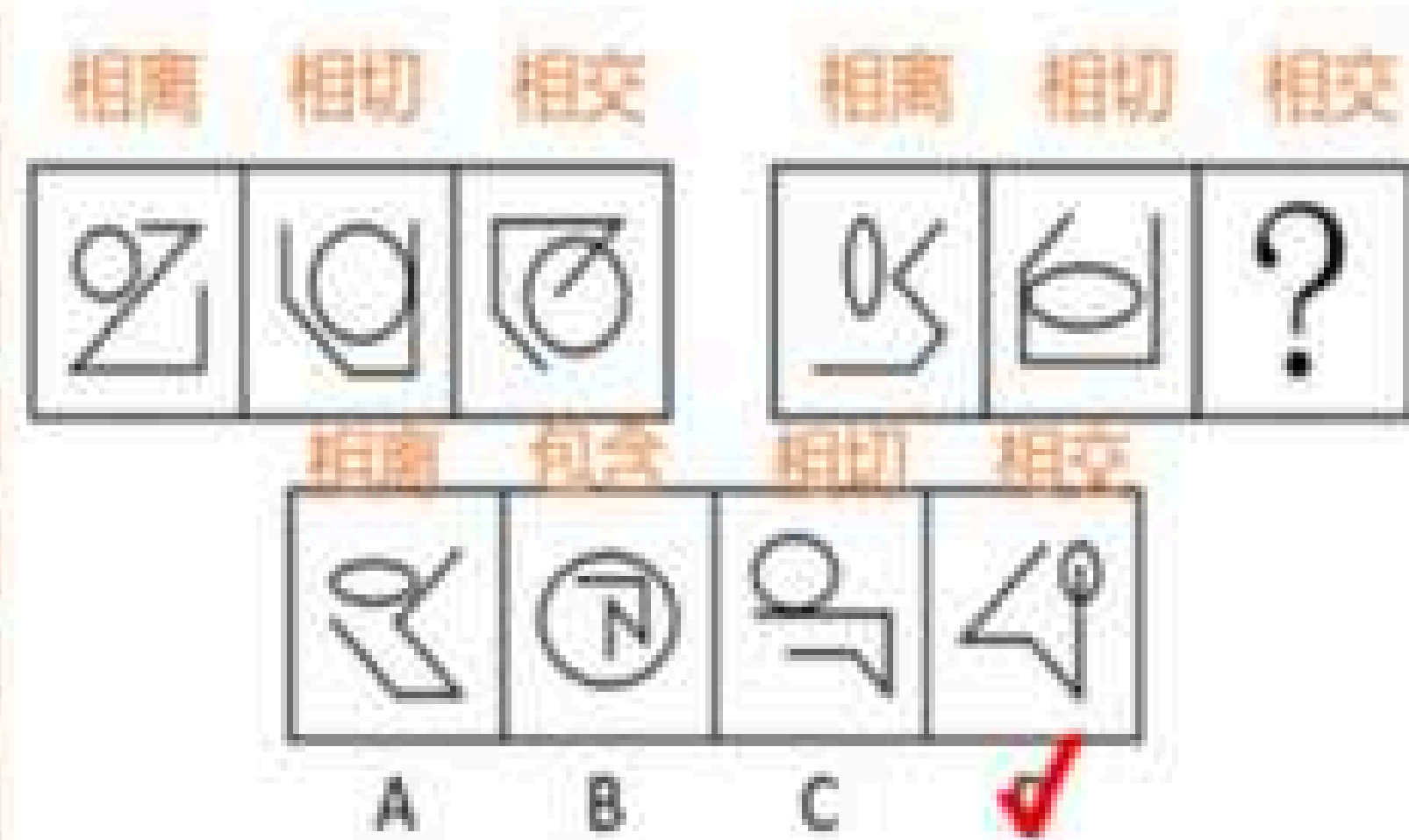
(2024国考) 黑面与外框的关系

(2024国考) 白色面之间的关系

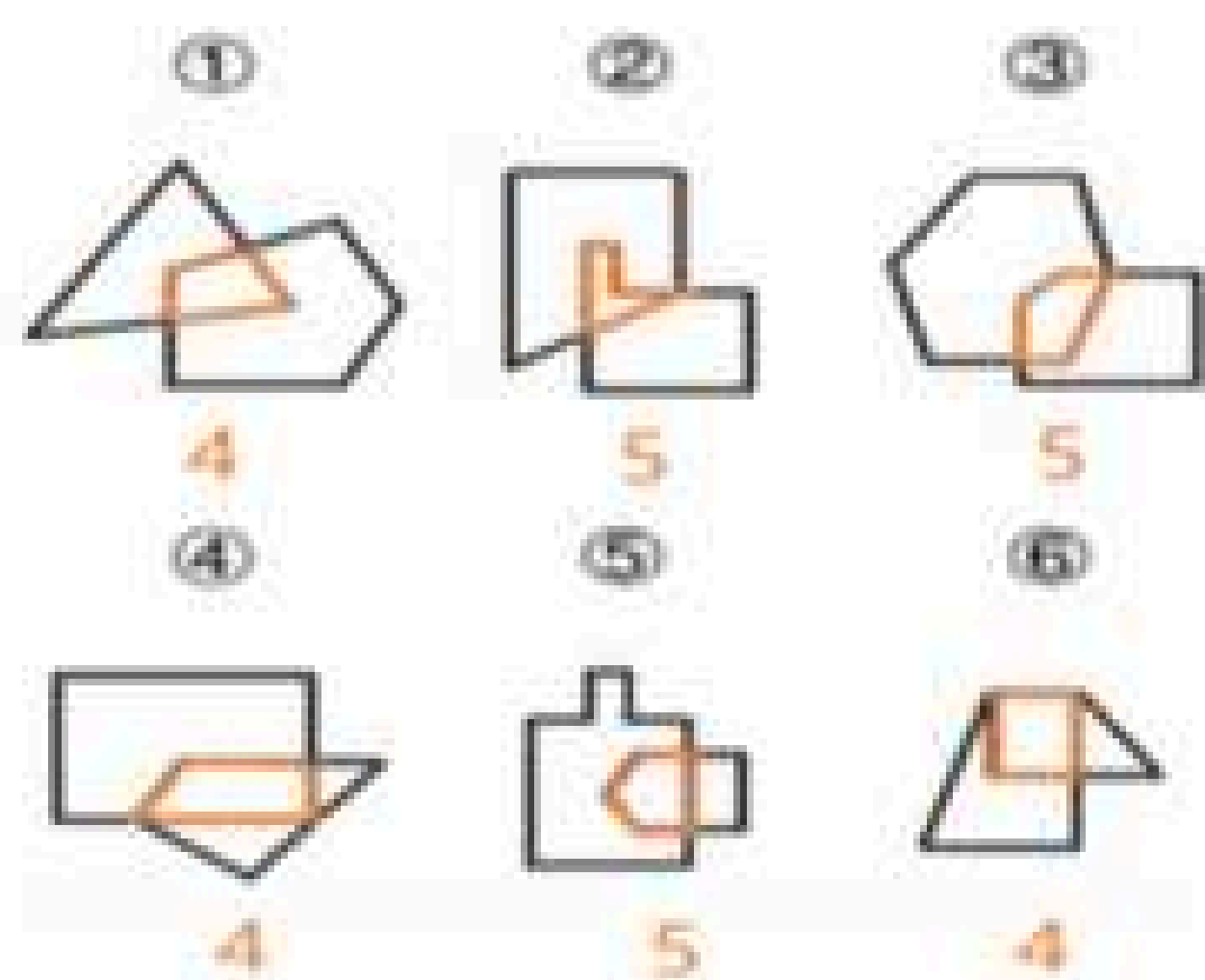
(2023国考) 黑面与白面关系

【图形间关系总结】

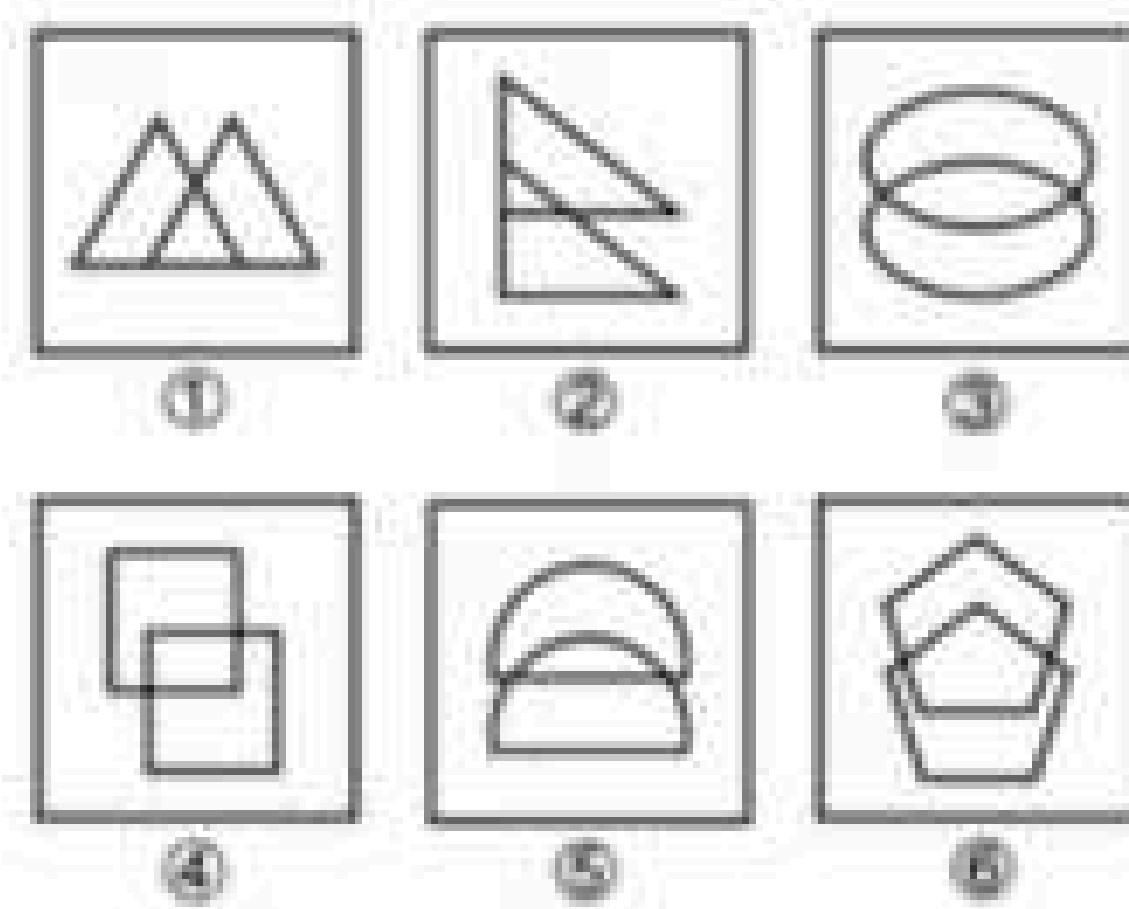
➤ 图形间关系-小结 (作图简单2-4个)



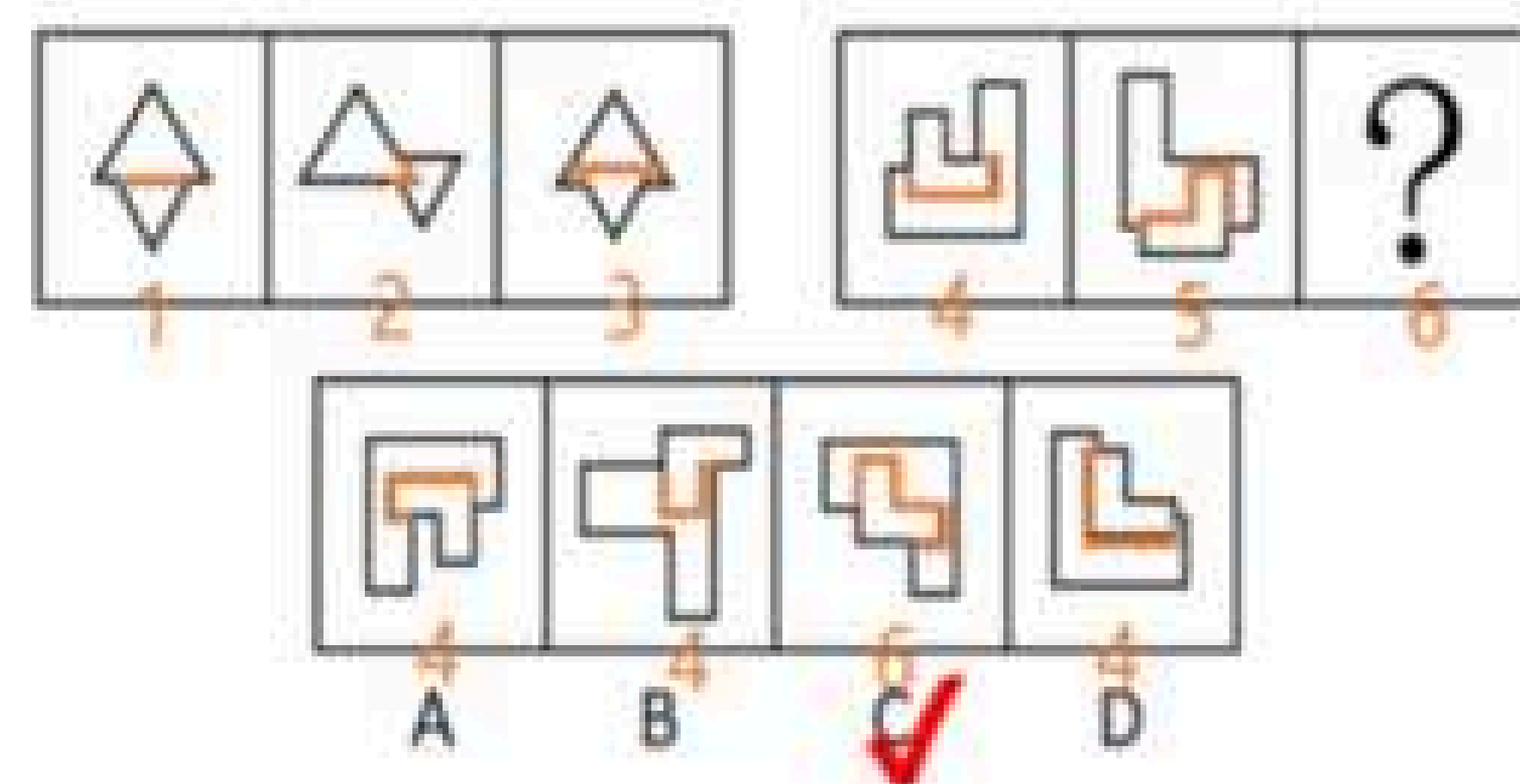
➤ 图形间关系



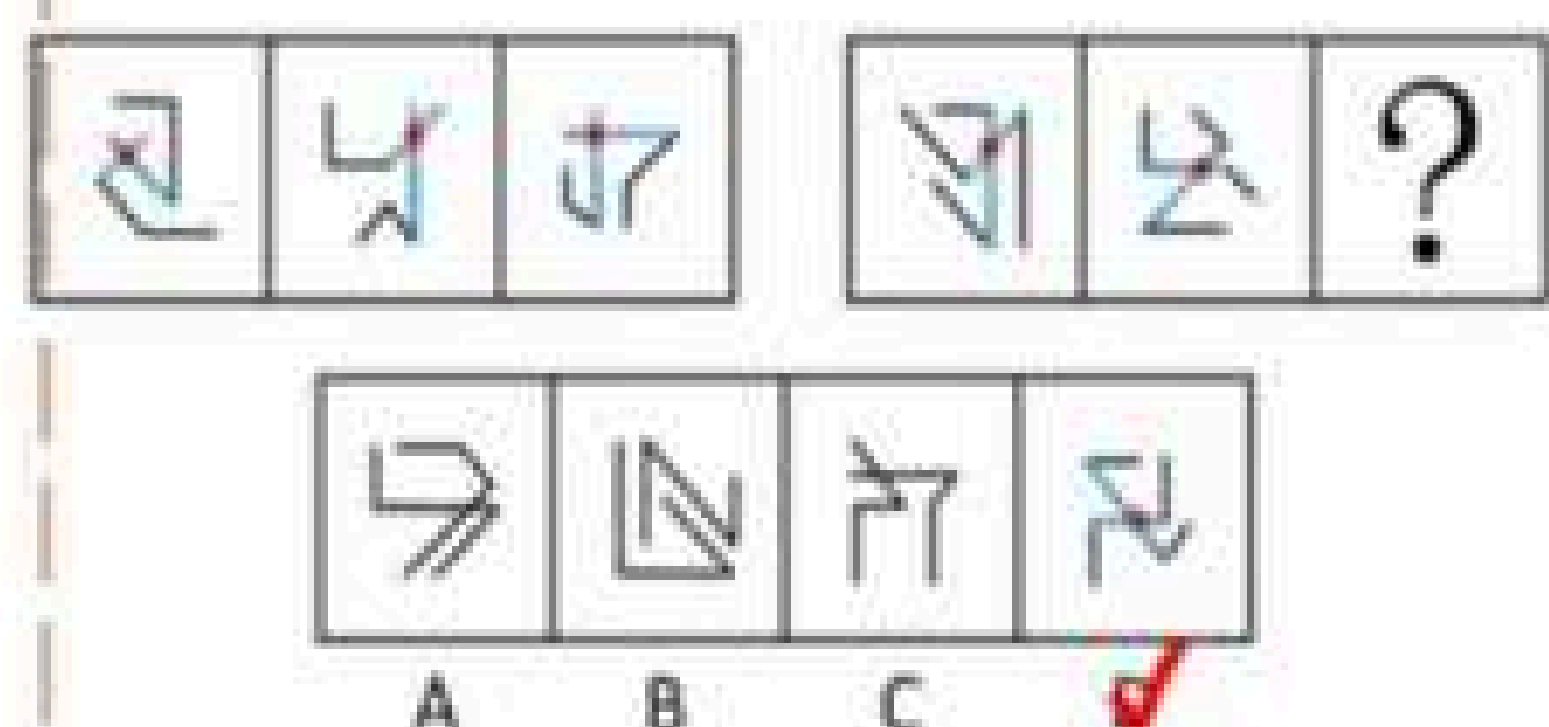
➤ 相交面-形状



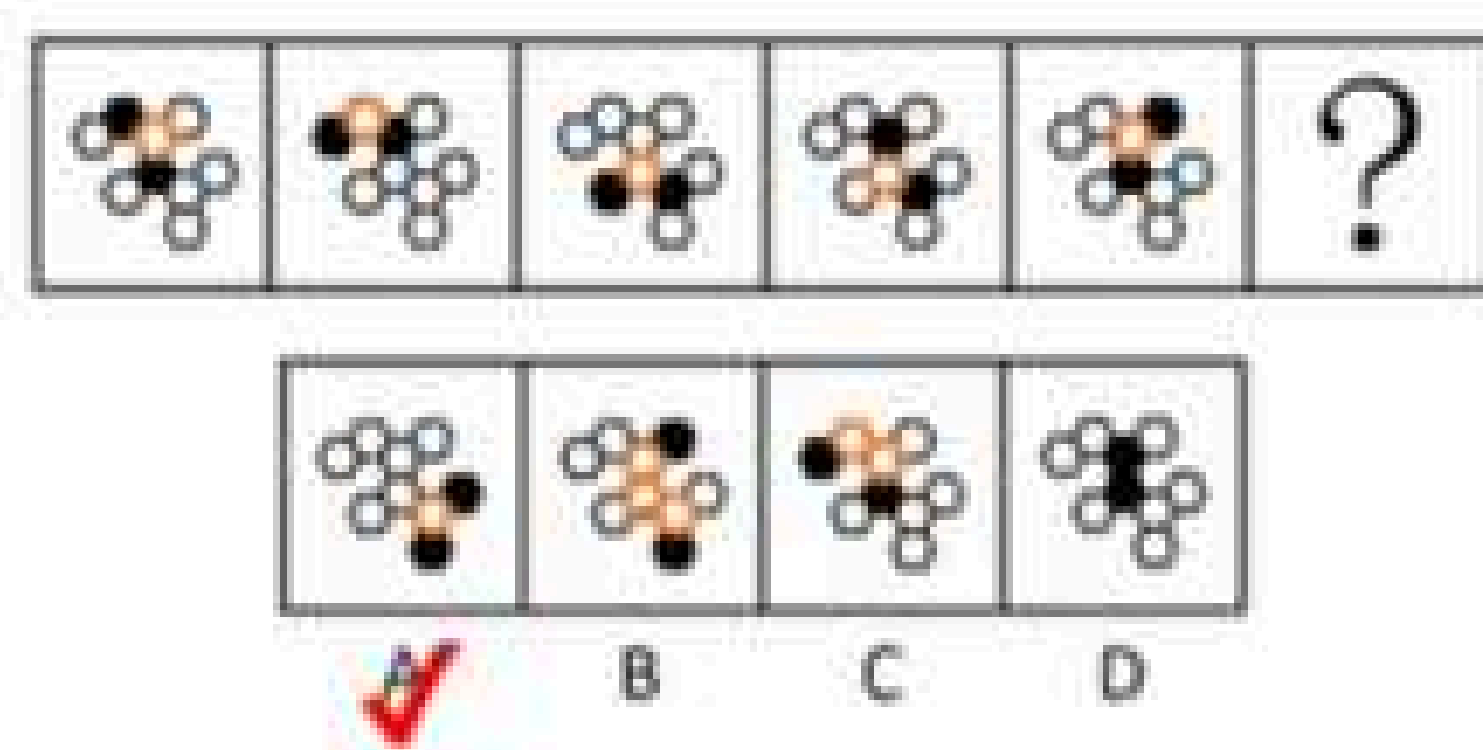
➤ 未相交面-形状



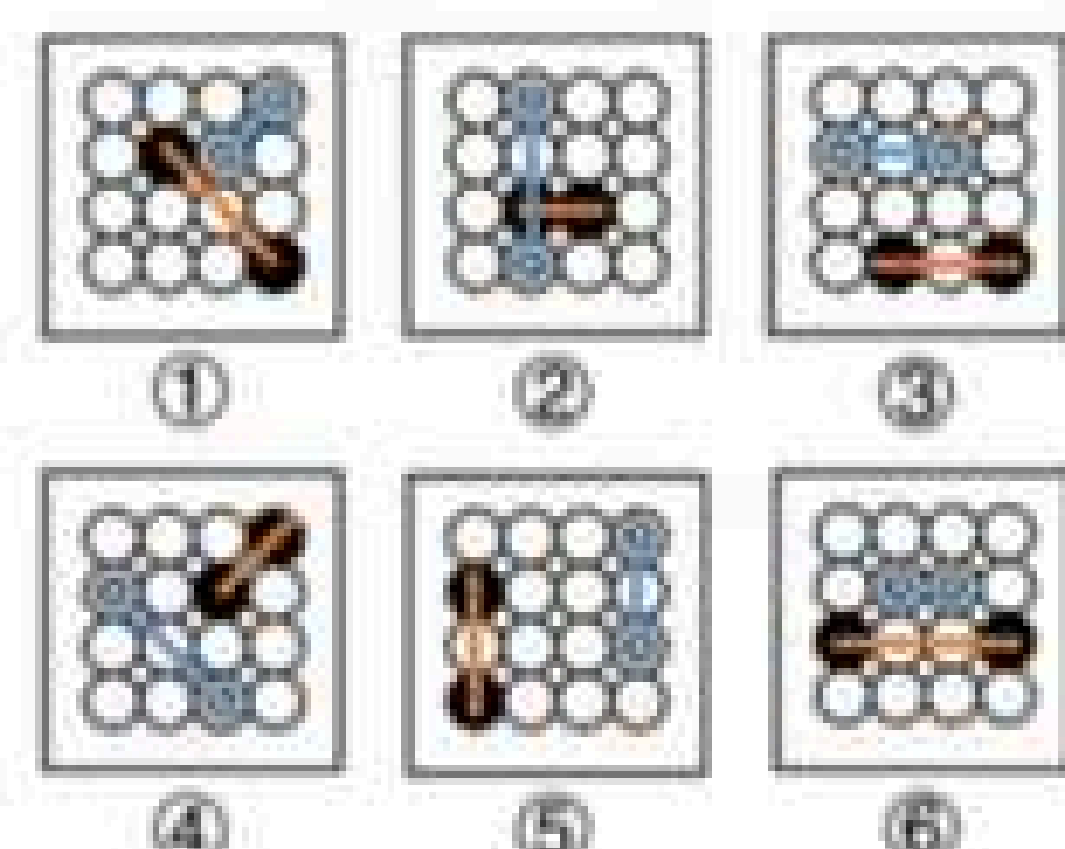
➤ 相交线-数量



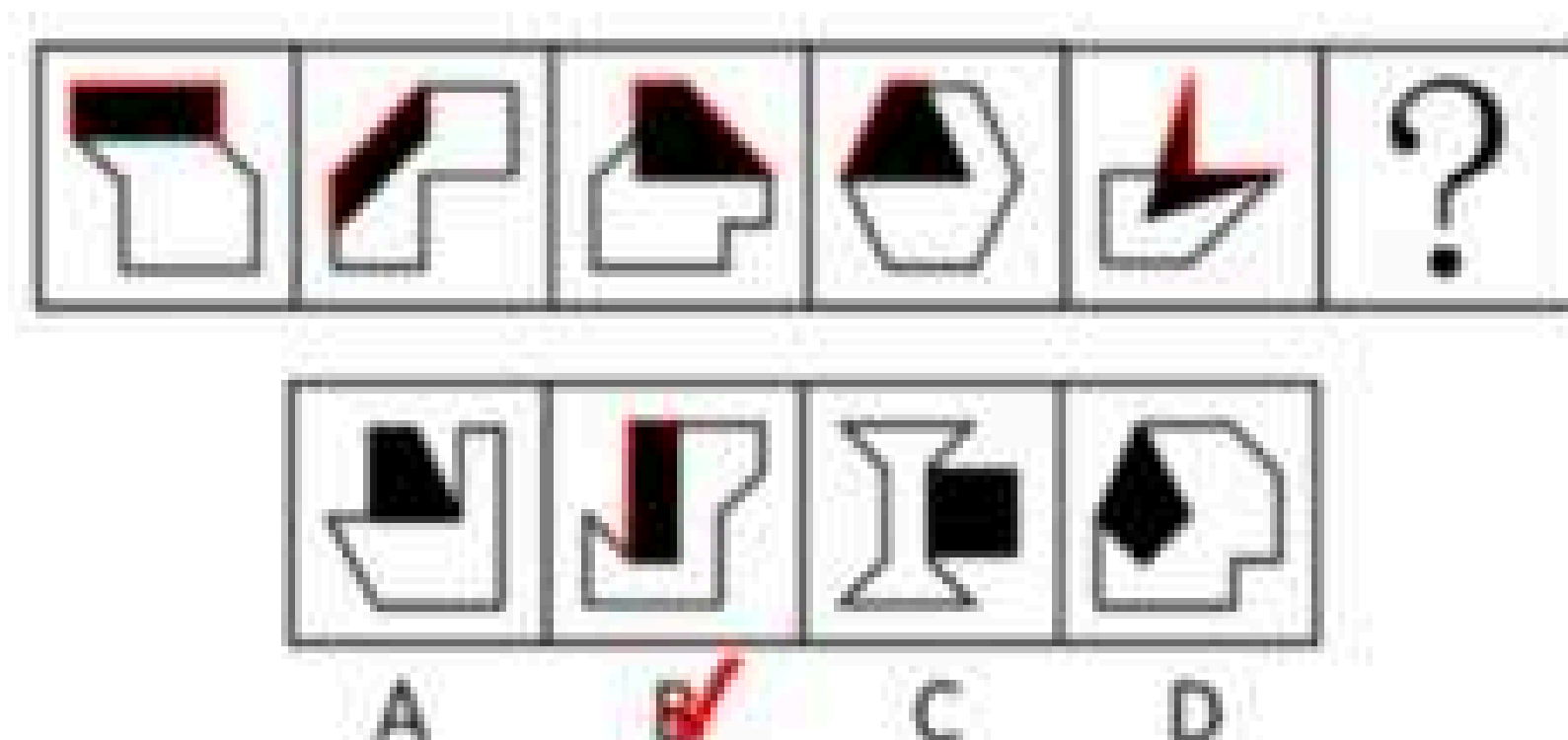
➤ 相交线的位置



➤ 黑球之间白球个数



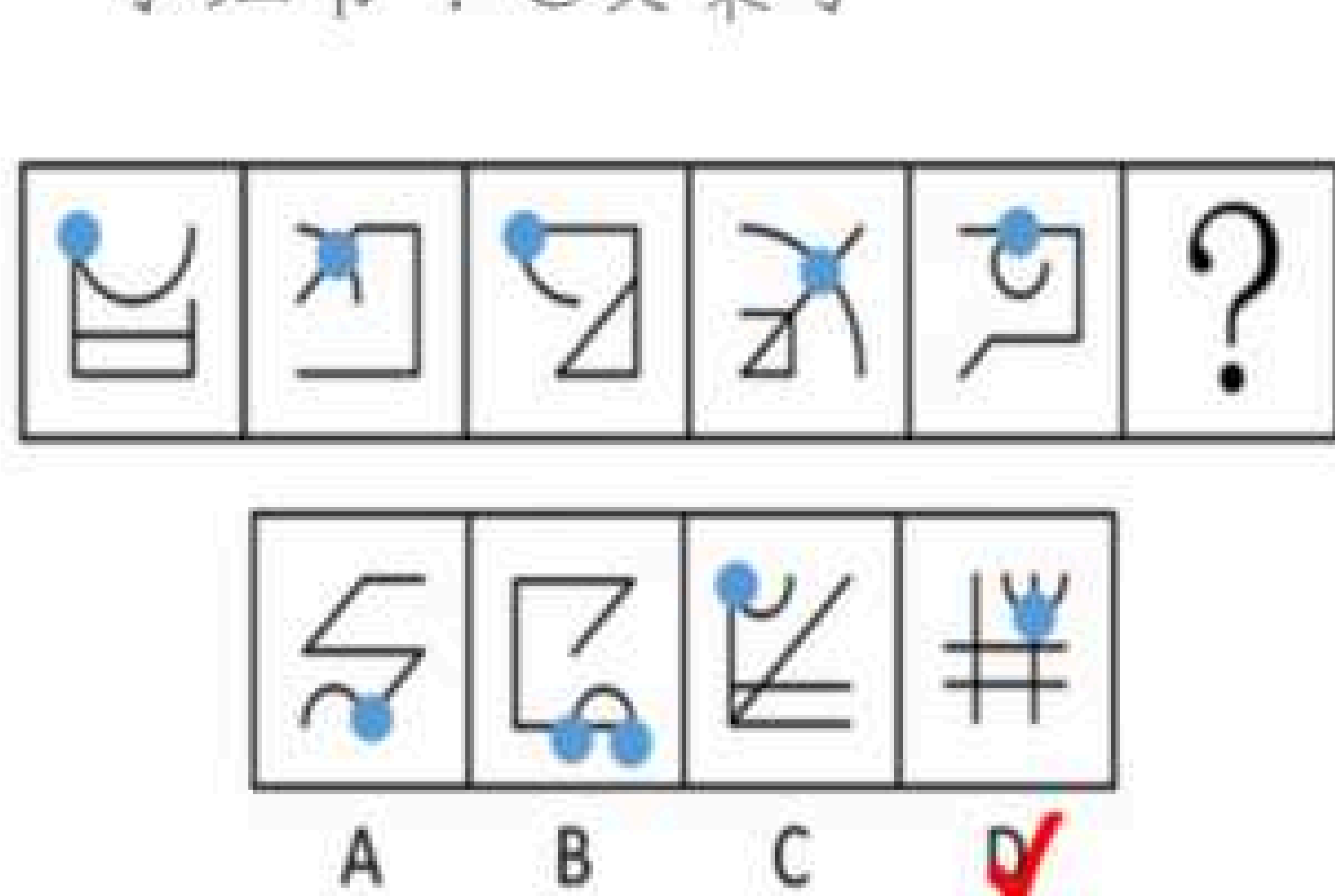
➤ 连线后-平行/垂直



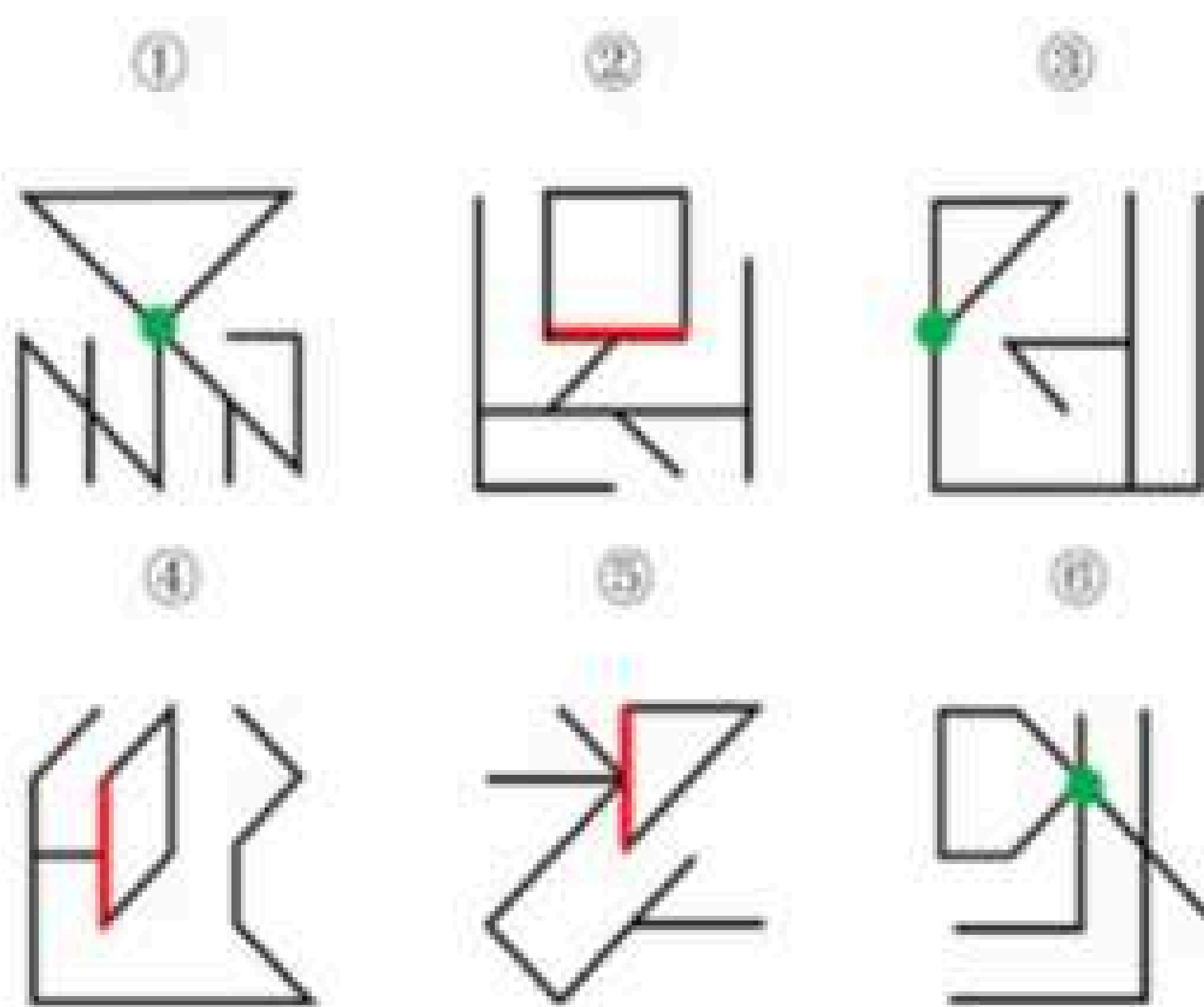
➤ 黑球与外框-相交线

➤ 图形间关系-小结 (共同+复杂图案)

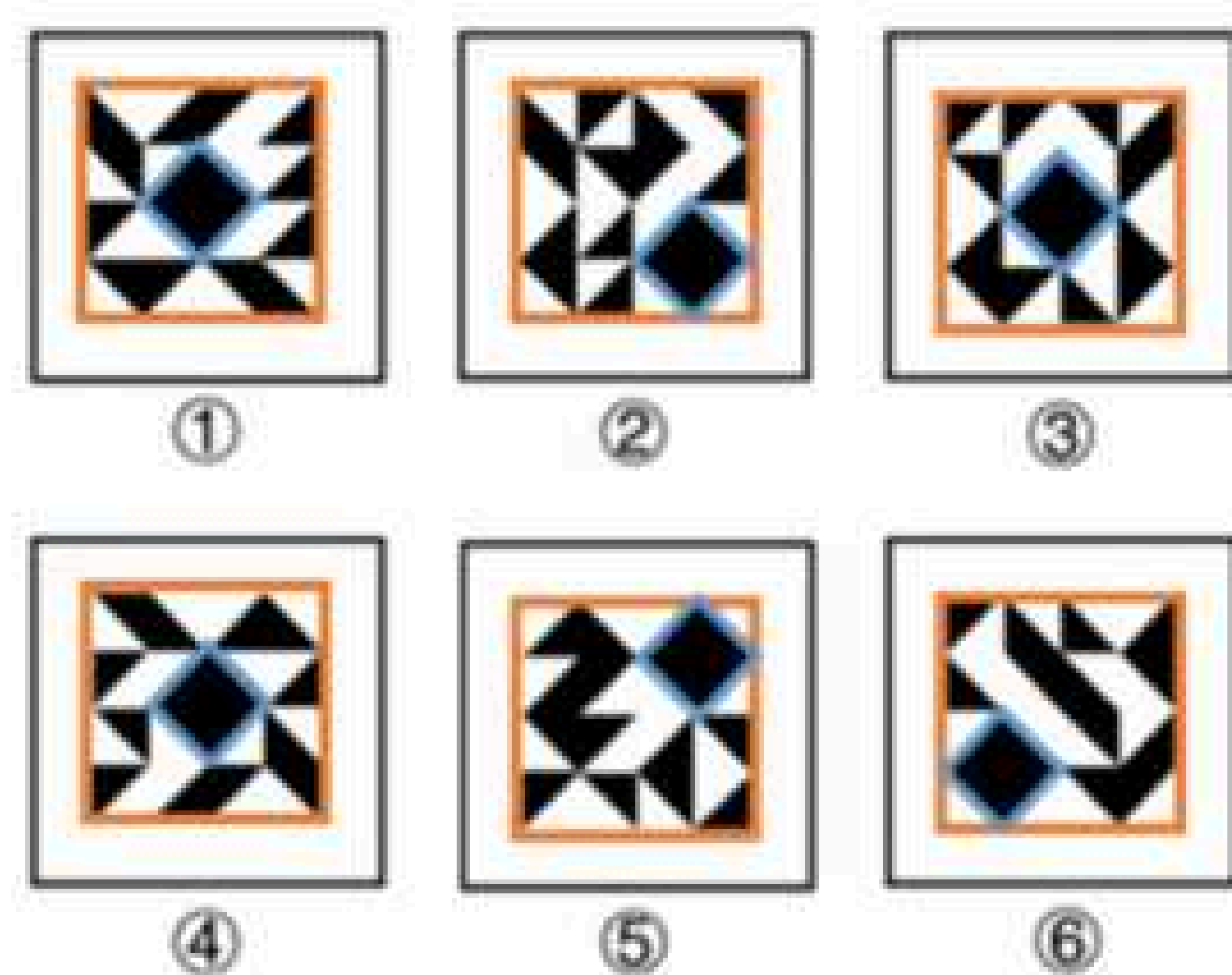
小红书：@贝栗子



➤ 曲线与线条-线的位置

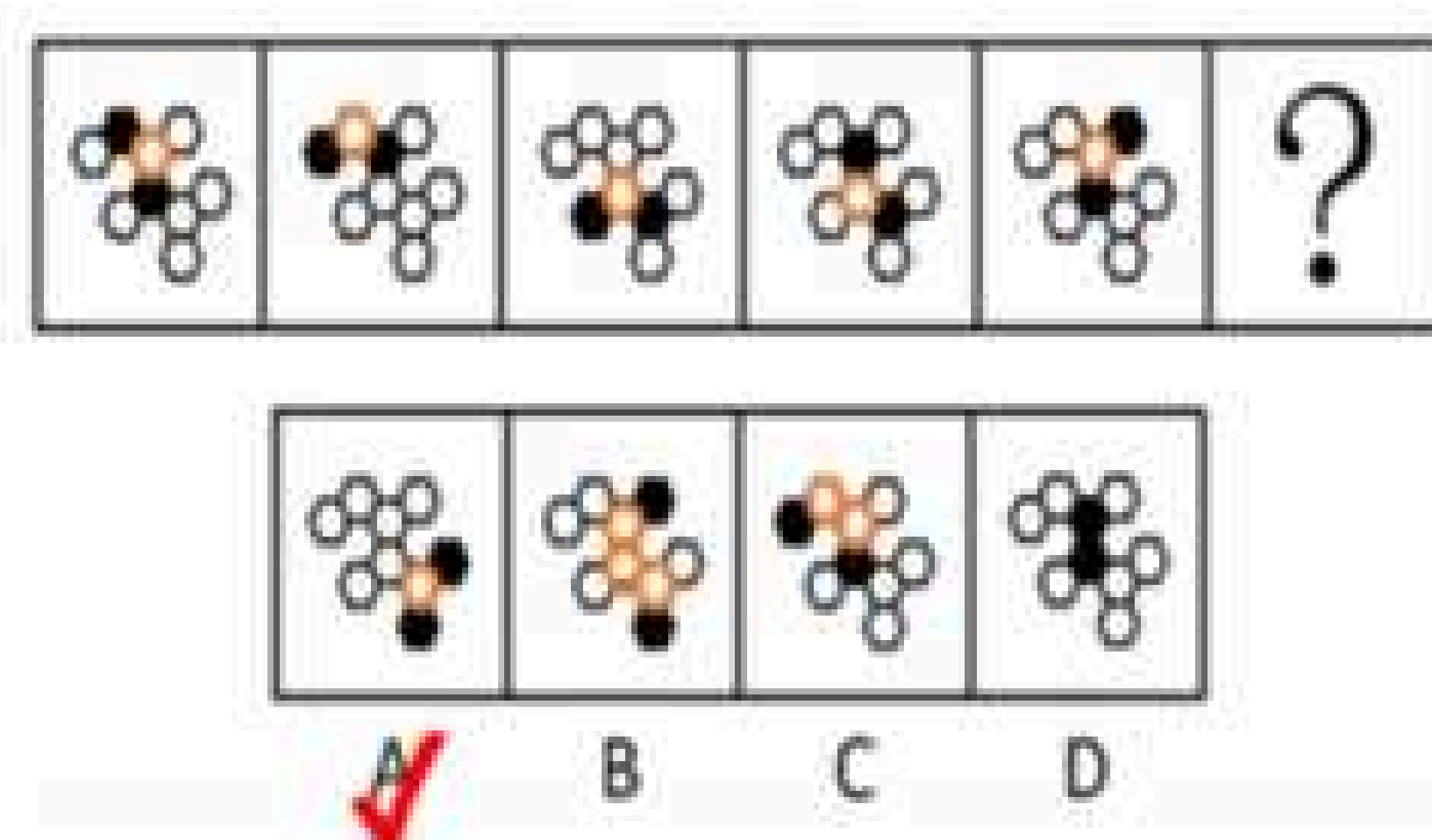
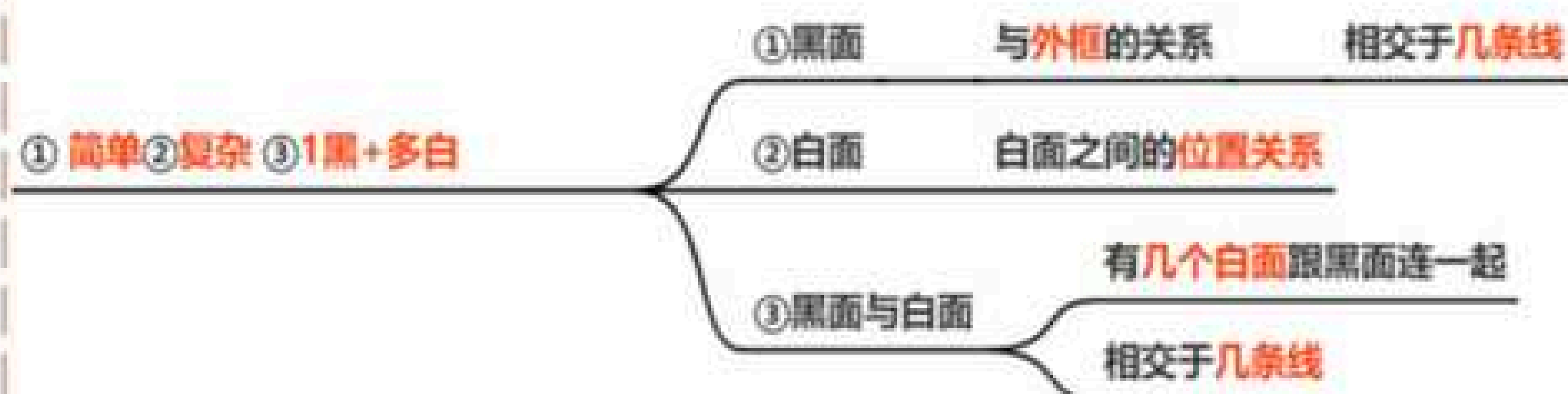


➤ 面与线条-相交线/点

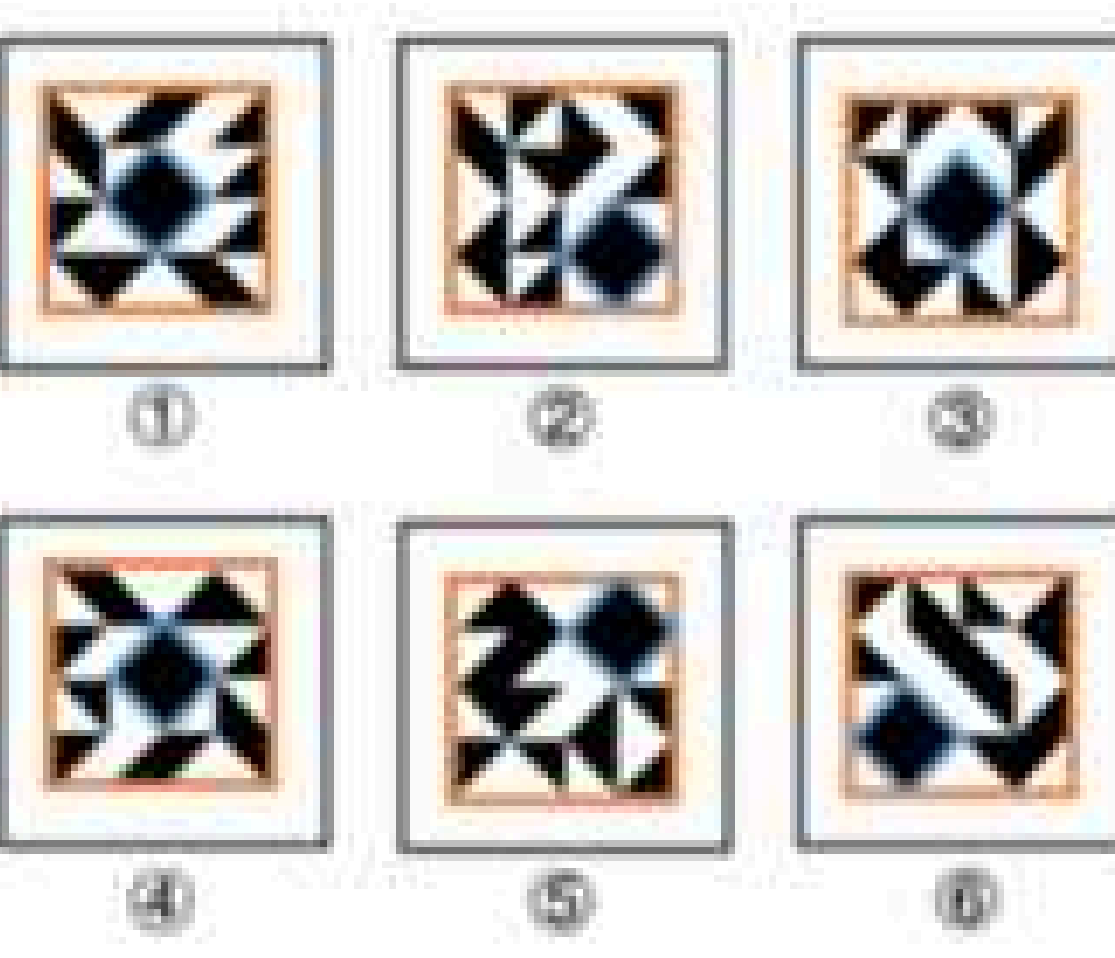


➤ 菱形与外框-是否相交

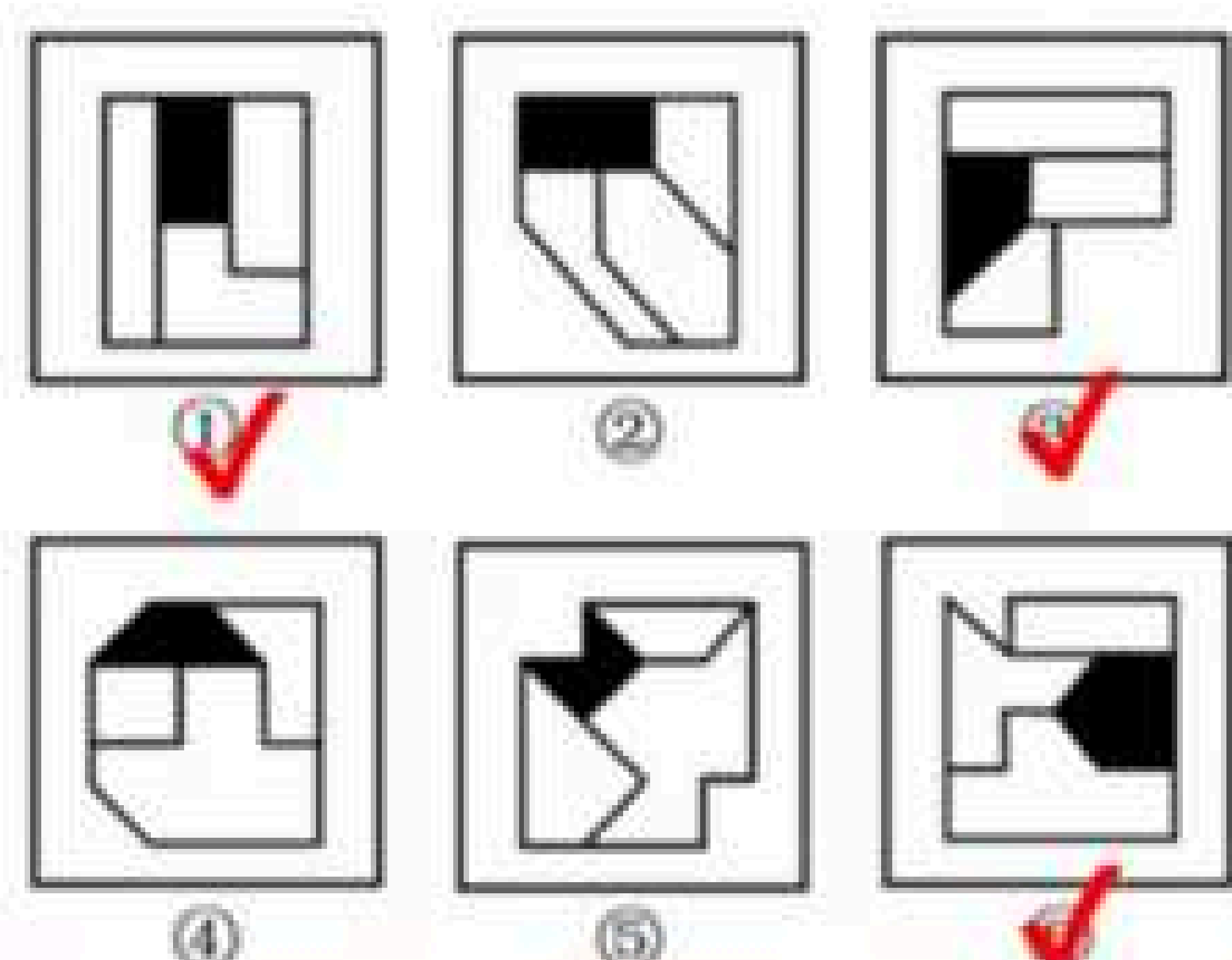
➤ 图形间关系-黑白块小结



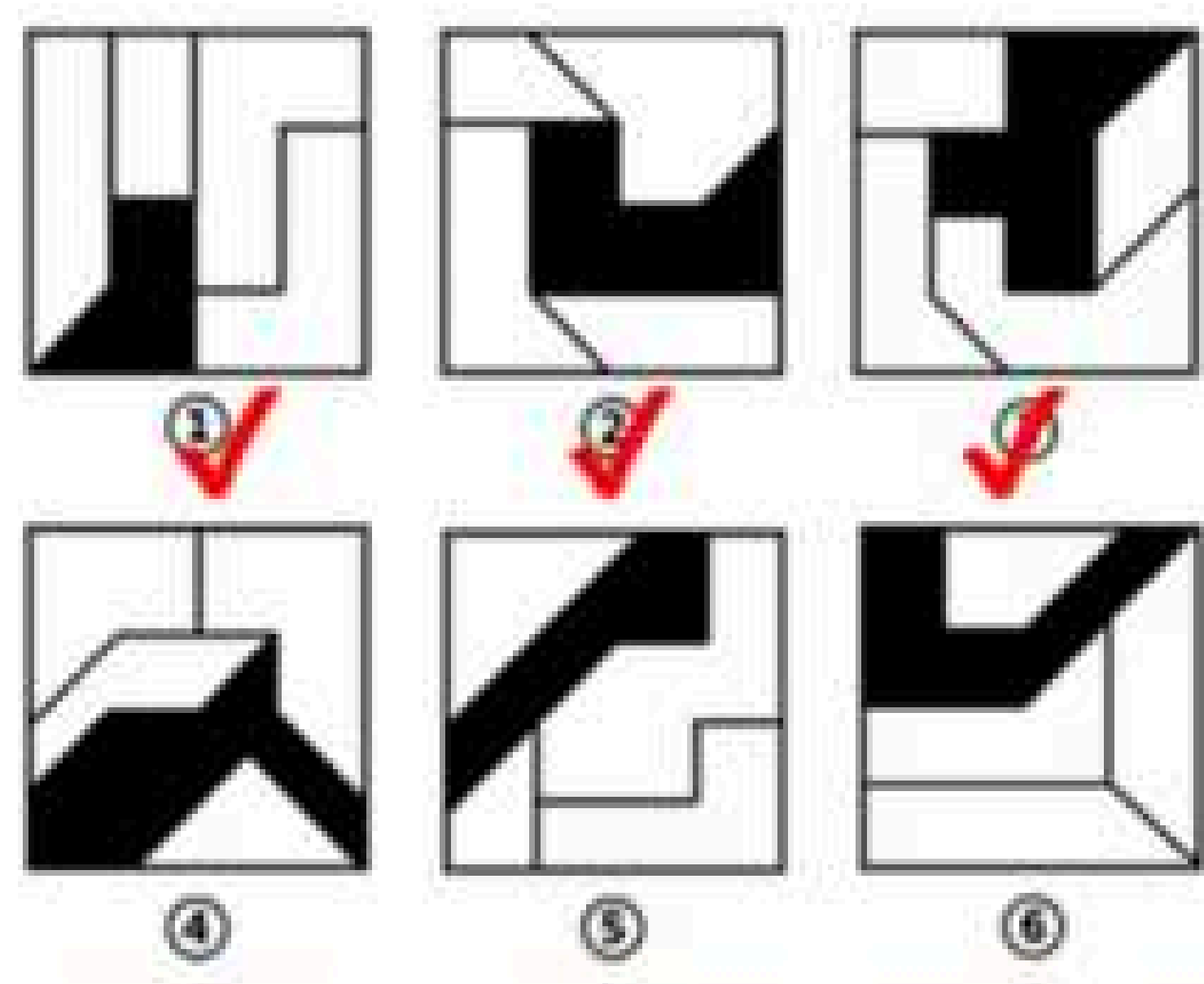
简单：对角、边边、隔n个



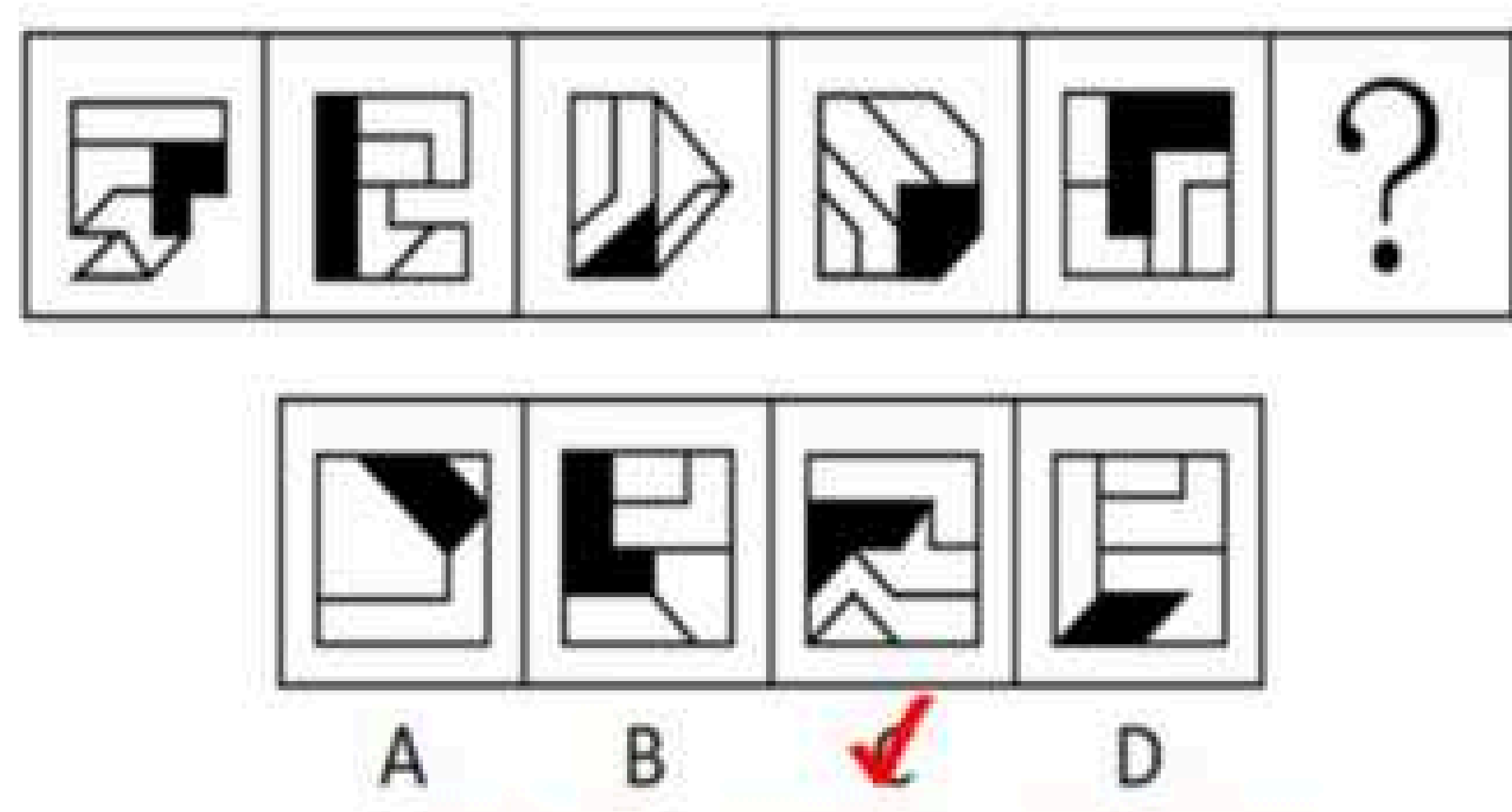
复杂：与外框关系



(2024国考) 黑面与外框的关系

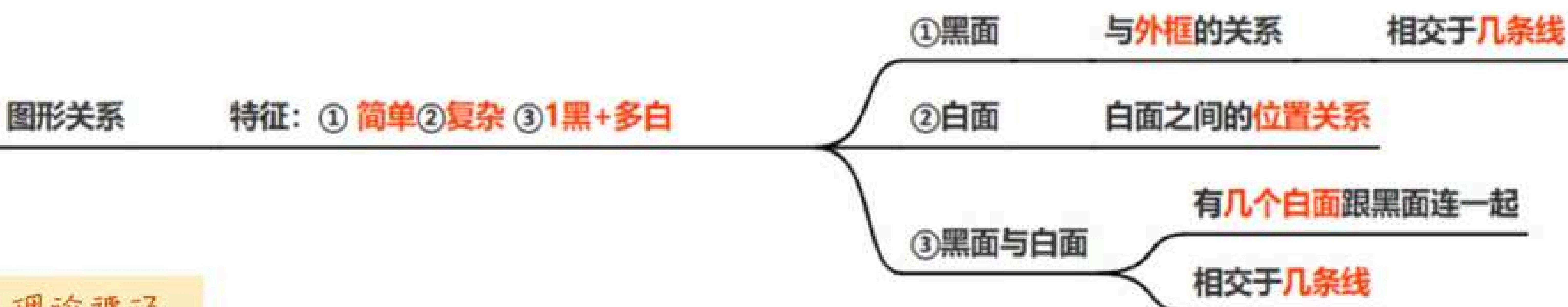


(2024国考) 白色面之间的关系



(2023国考) 黑面与白面关系

实战思维



理论速记

【图形关系】：

命题者作图特点：极端情况（特别简单、复杂）

①特别简单（2~4个图案）

考点：（一）相离/包含

（二）相交：

1.相交于点：切点/交点、曲直性

2.相较于边：数量、长/短、整体/局部、曲线/直线、线的位置

3.相交于面：形状、属性、面积

②特别复杂（共同图案+复杂图案）

考点：共同图案与复杂图案之间的位置关系



“起步就是冲刺”

“开局就是决战”



第四节：数量规律-面、线、点

没有一样的图案 (3类)



①命题者作图特点：每幅图图案不一样

②考点：1.属性 2.数量 3.图形关系

③宏观思维：

1.先属性,后数量,且属性规律中的对称性优先级最高

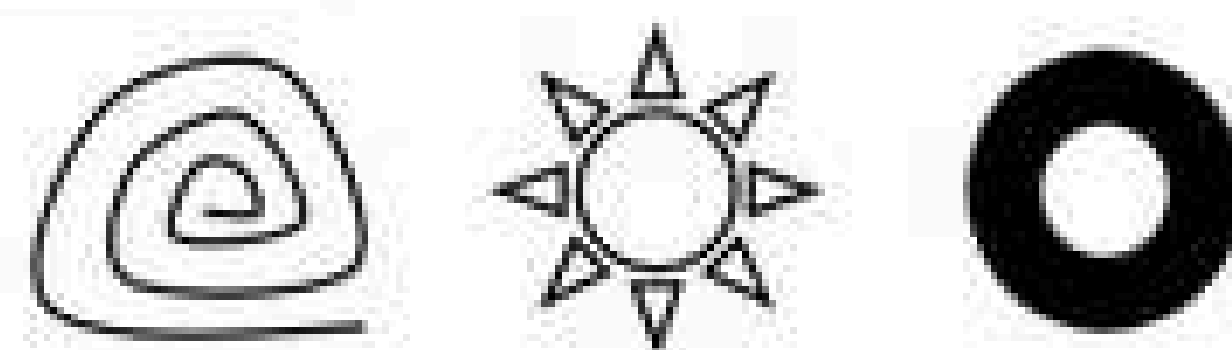
2.背诵数量规律中图形特征,直接定位

3.极端情况,优先考虑“图形关系”

小红书：@贝栗子

1.面数量

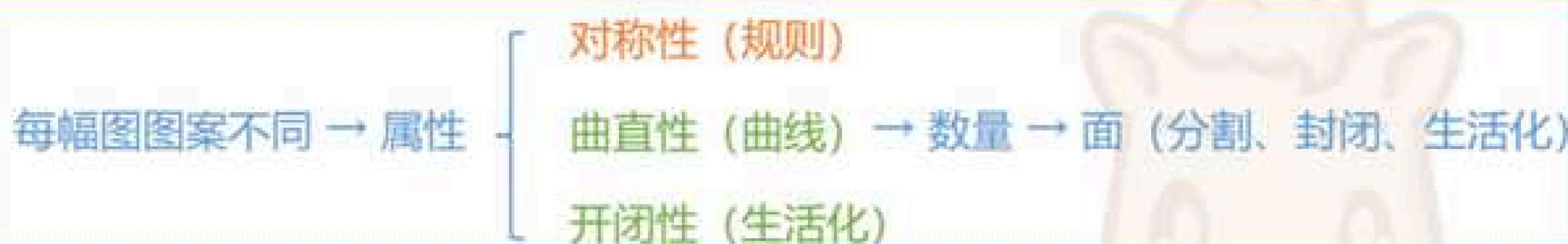
含义 白色的封闭的区域,黑色不是面



来源于小红书@贝栗子

作图特点 ①图形被分割 ②封闭面明显 ③生活化

解题思路



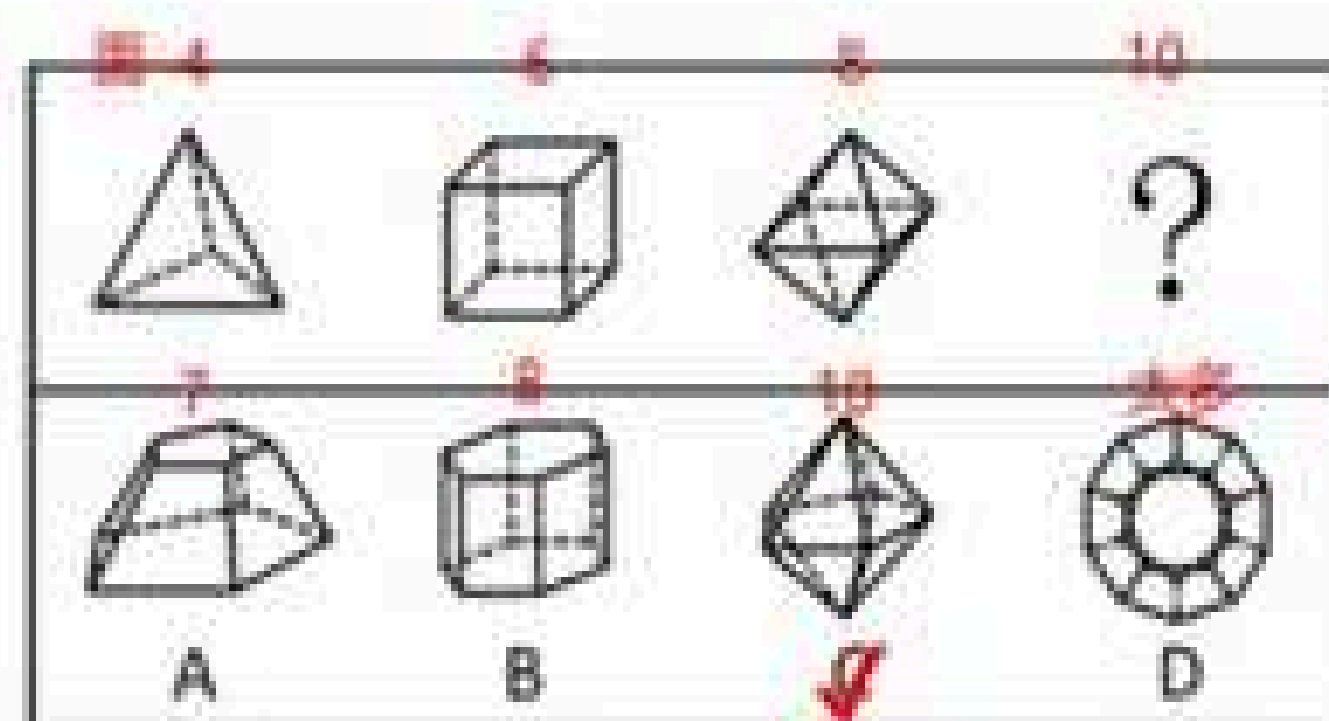
基础考点

面的数量

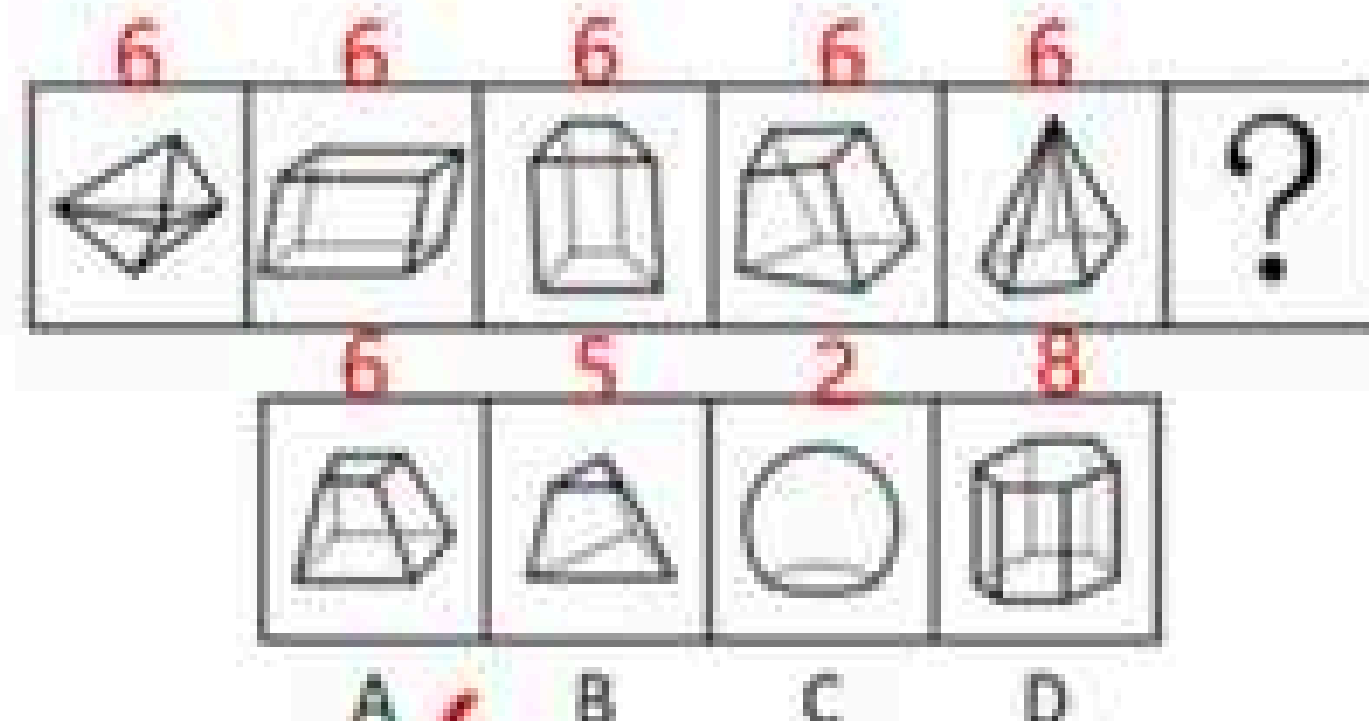
面的运算

◆ 立体考查平面“小心思”

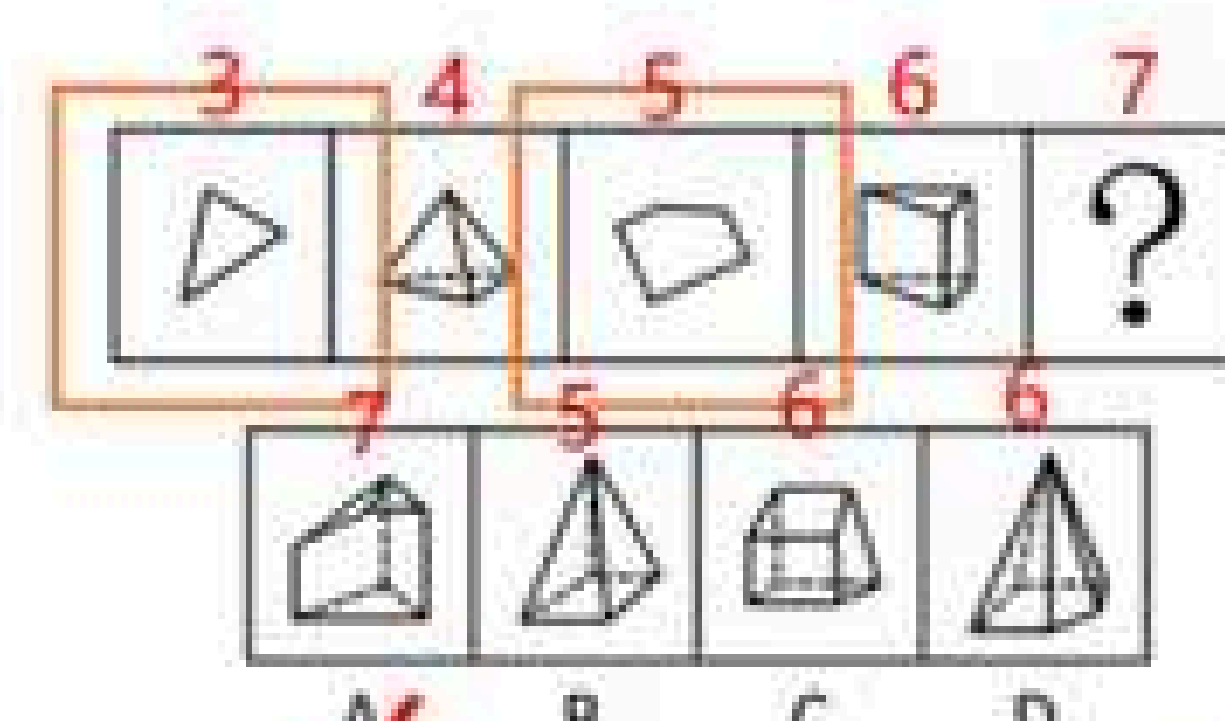
➢ 考查方向：面为主，点其次



【2023上海】全部-面数量



【2020四川】全部-面数量



【2021联考】点数量

➢ 九宫格运算思维

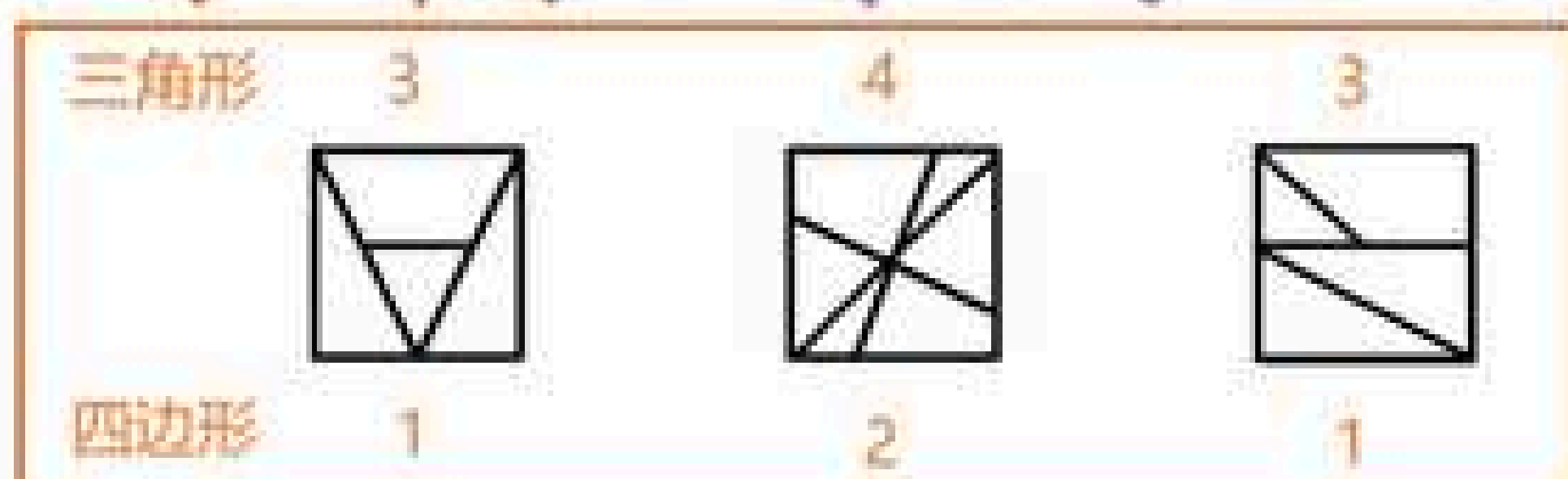
5 +	1 =	6	3 +	1 +	4 =	8
2 +	3 =	5	5 +	2 +	1 =	8 运算2【难】
3 -	1 =	?	2 +	2 +	4 =	8

细化考法

所有面:分割后每一个面的形状(整体思想)----都一样

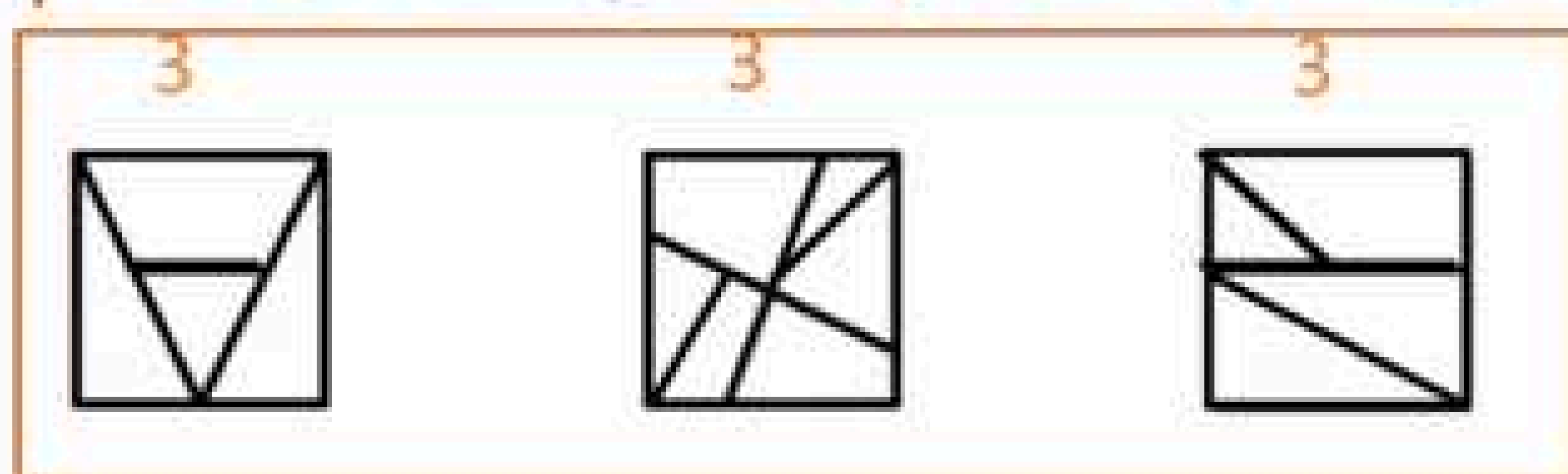


所有面:只有2种面-三角形与四边形运算(整体思想) 三角形-高频出现
单数、递增运算



所有面

所有面(部分面):只数三角形(拆分思想)



难点: 三角形与四边形的运算(相减, 倍数, 相加)

	图①	图②	图③	图④	图⑤	图⑥
三角形	2	1	2	3	3	4
四边形	3	2	3	2	2	3

四边形-三角形=1 四边形-三角形=-1

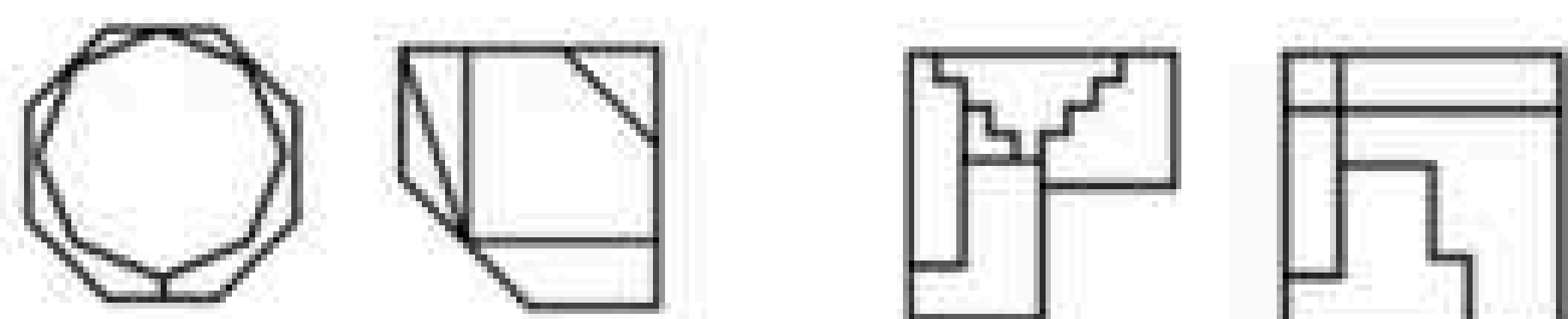
	图①	图②	图③	图④	图⑤	图⑥
三角形	2	1	2	3	3	4
四边形	1	2	1	6	6	2

	图①	图②	图③	图④	图⑤	图⑥
三角形	2	1	2	3	3	4
四边形	3	4	3	3	3	2

小红书: @贝栗子

作图特点:有“明显的大面或小面”

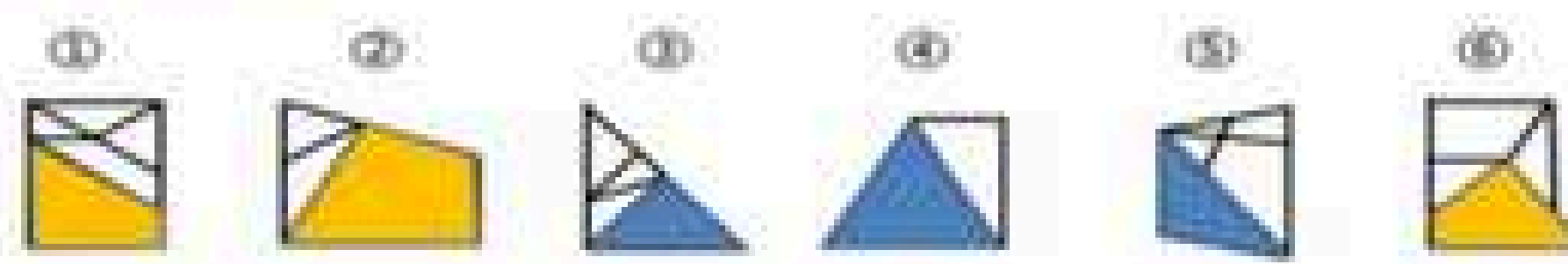
难点:与形状、属性、面积的结合



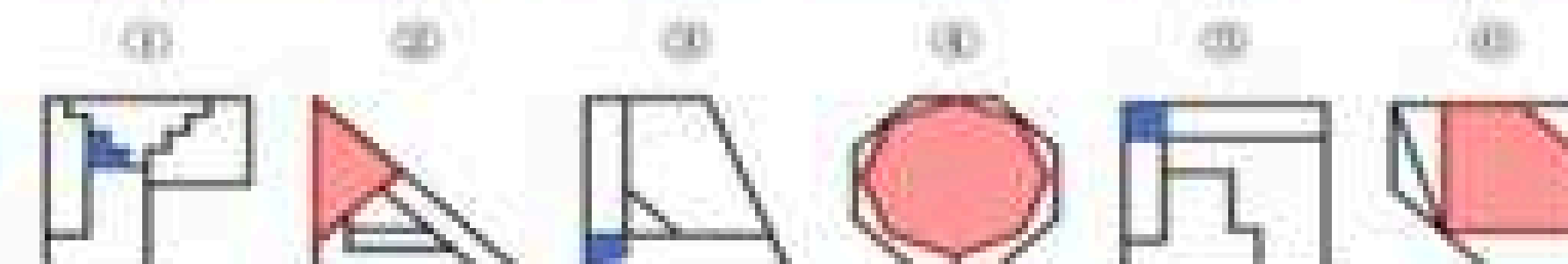
大小面

> 难点: 大小面与形状、属性、面积的结合

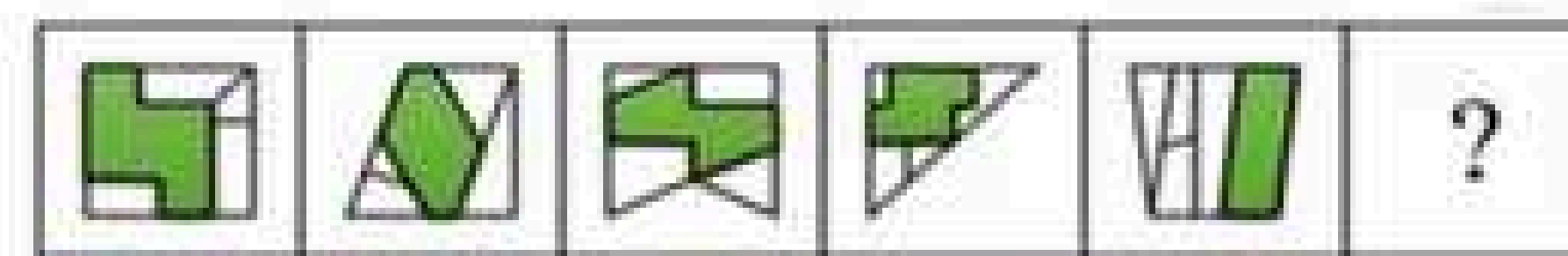
1.形状: 三角形、四边形



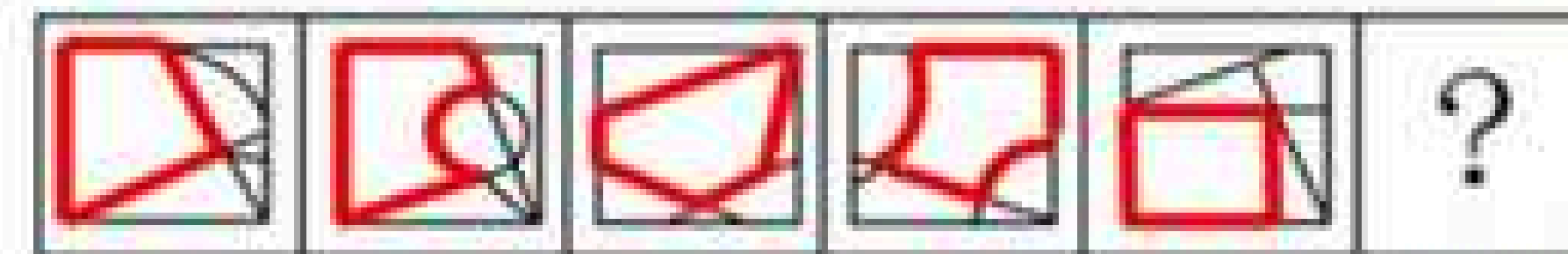
2.形状: 与外框关系(自己/邻居)



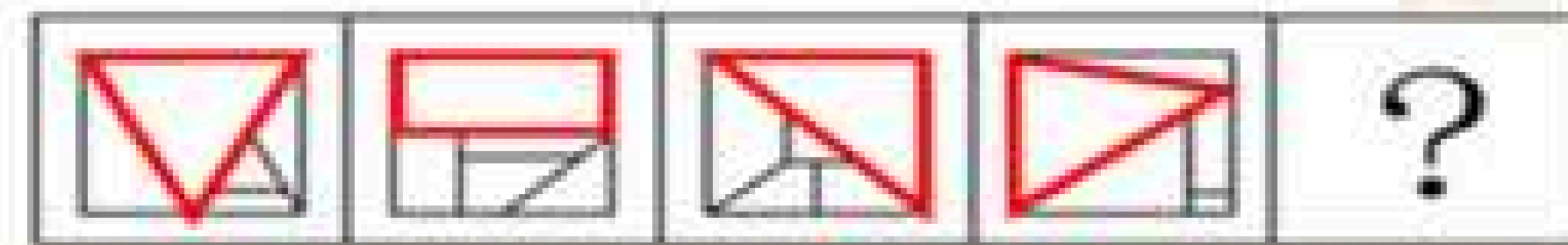
3.属性: 最大/小面-对称性



4.属性: 最大/小面-曲直性



5.面积: 占原图的一半



高频

相同面

大小、形状都一样的面(个数、组数)

作图:有“明显的一样的面”



免费学习 公众号: 樱有尽有

6 + 6

所有, 大小, 相同 + 形状, 属性, 面积



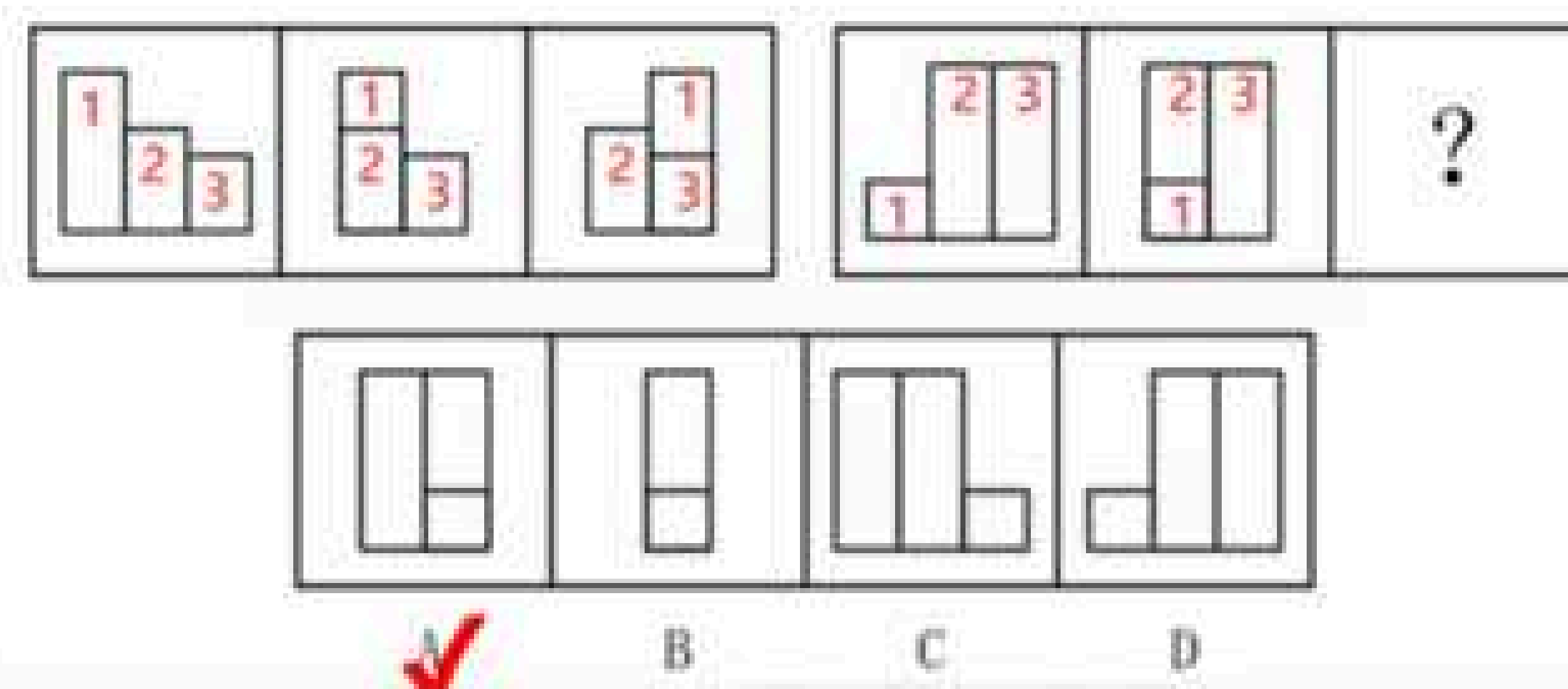
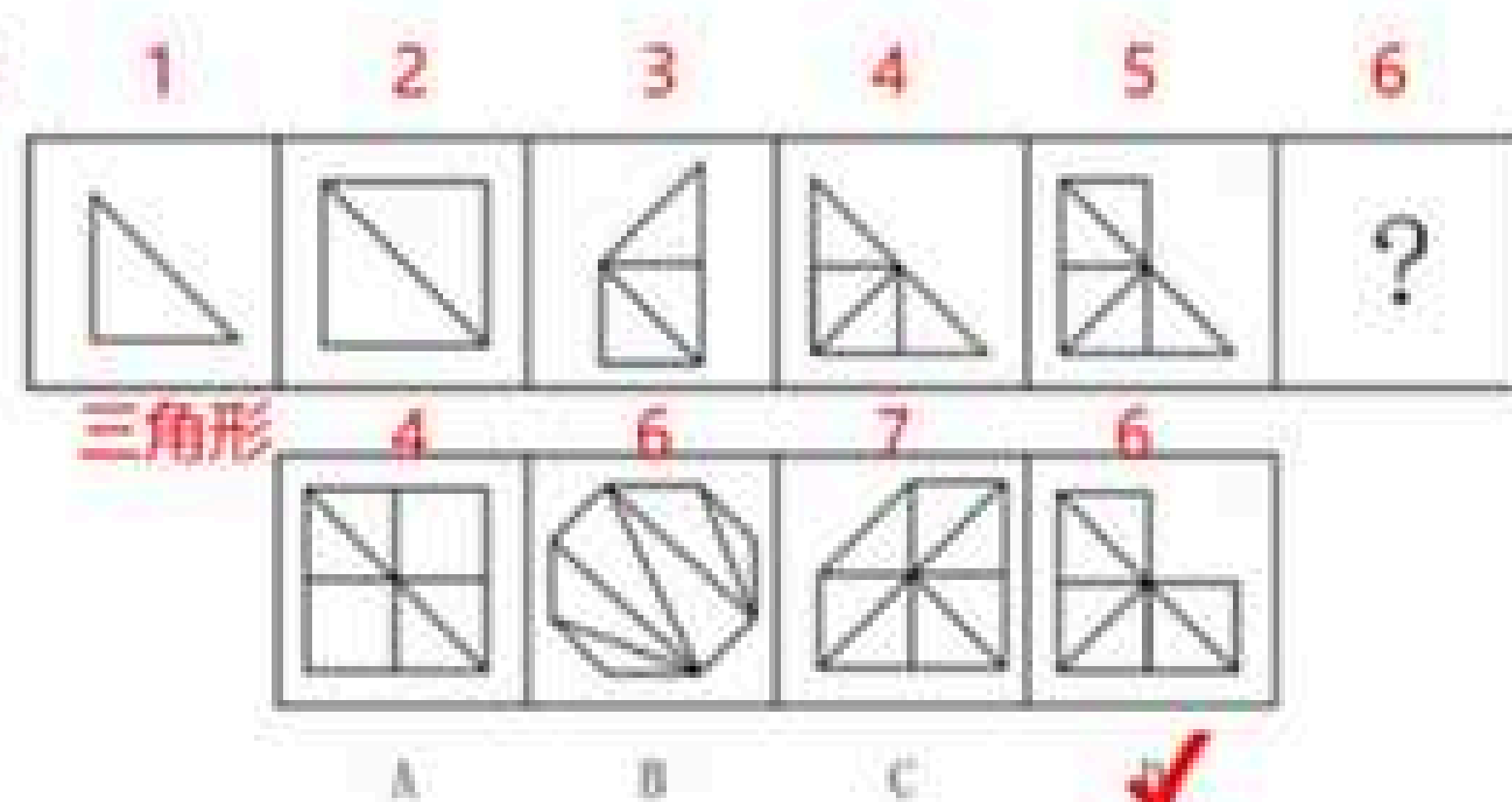
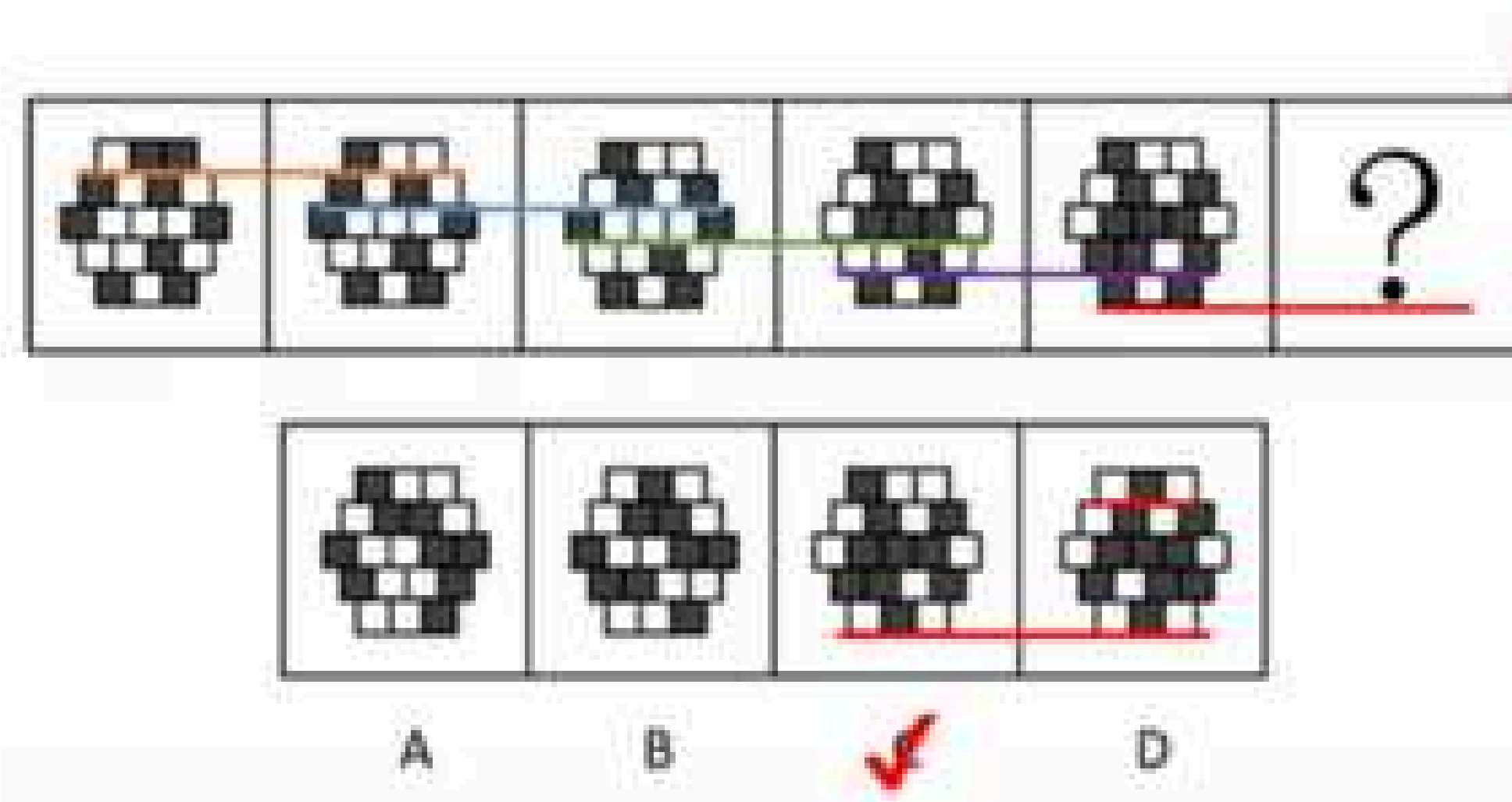
面-黑白块 (拔高)

● “相邻比较”怎么出?

小红书: @贝栗子

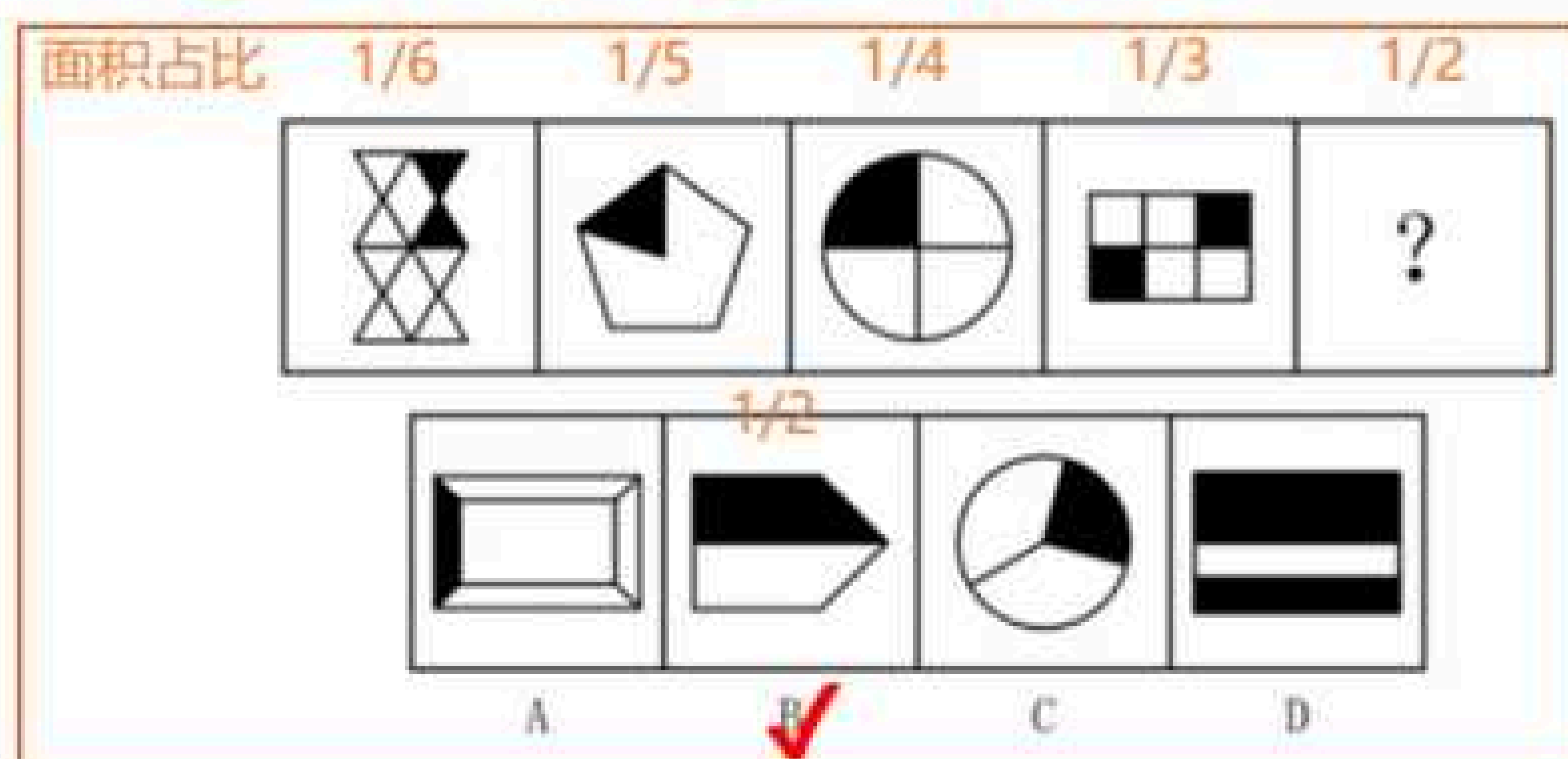
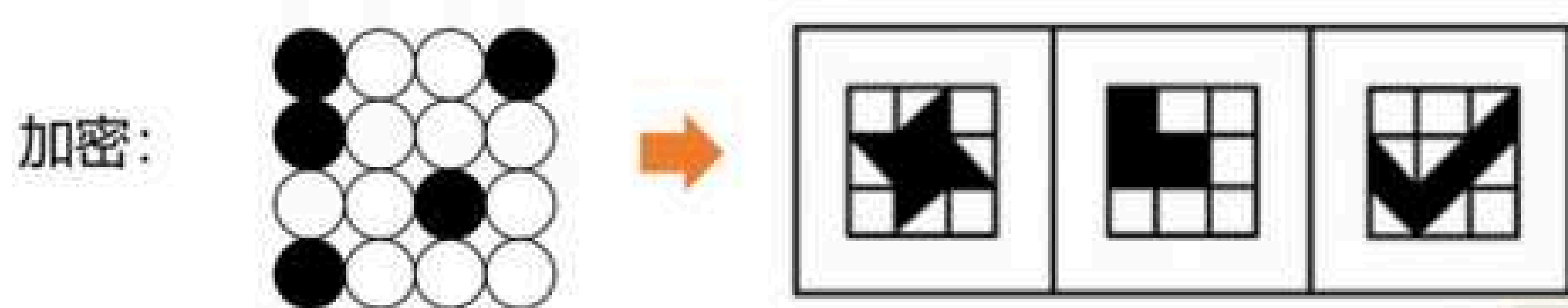
➤ 核心: 相邻两幅图之间“有一样的部分”

➤ 易错: “不一样的部分”可以有规律, 也可以没规律



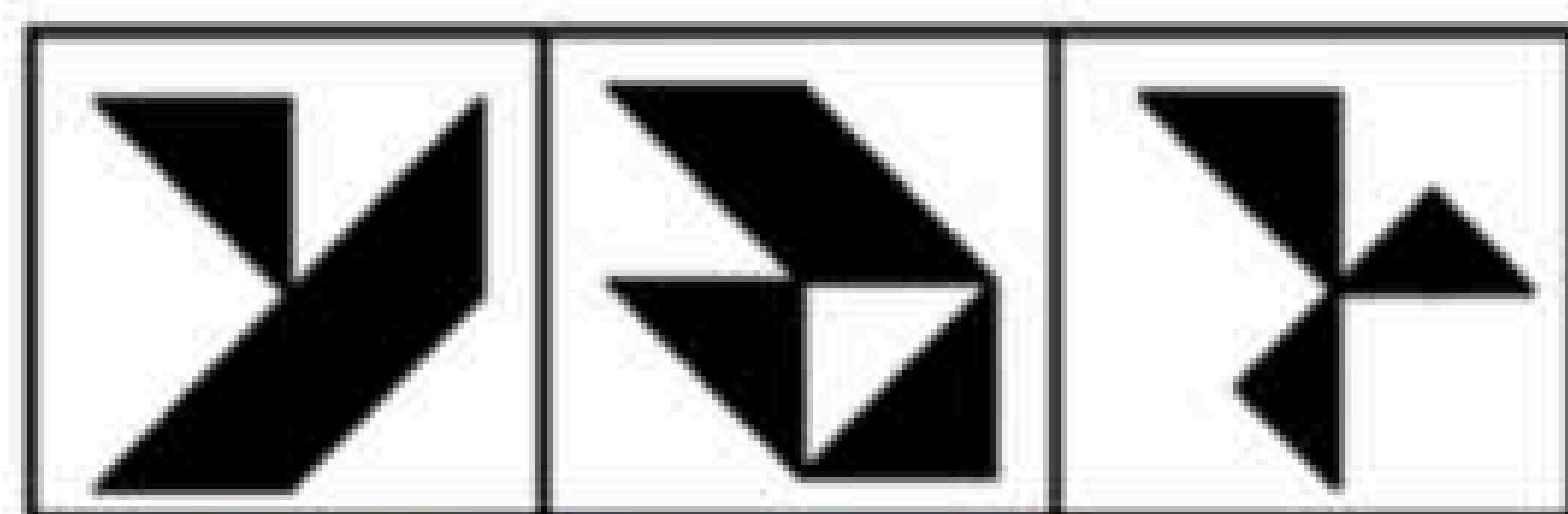
● 黑白块

- 黑块被分割, 背景有网格
 - ① 面积占比 1/2, 1/3, 1/4 等
 - ② 比大小 — 黑色面积与白色面积比较

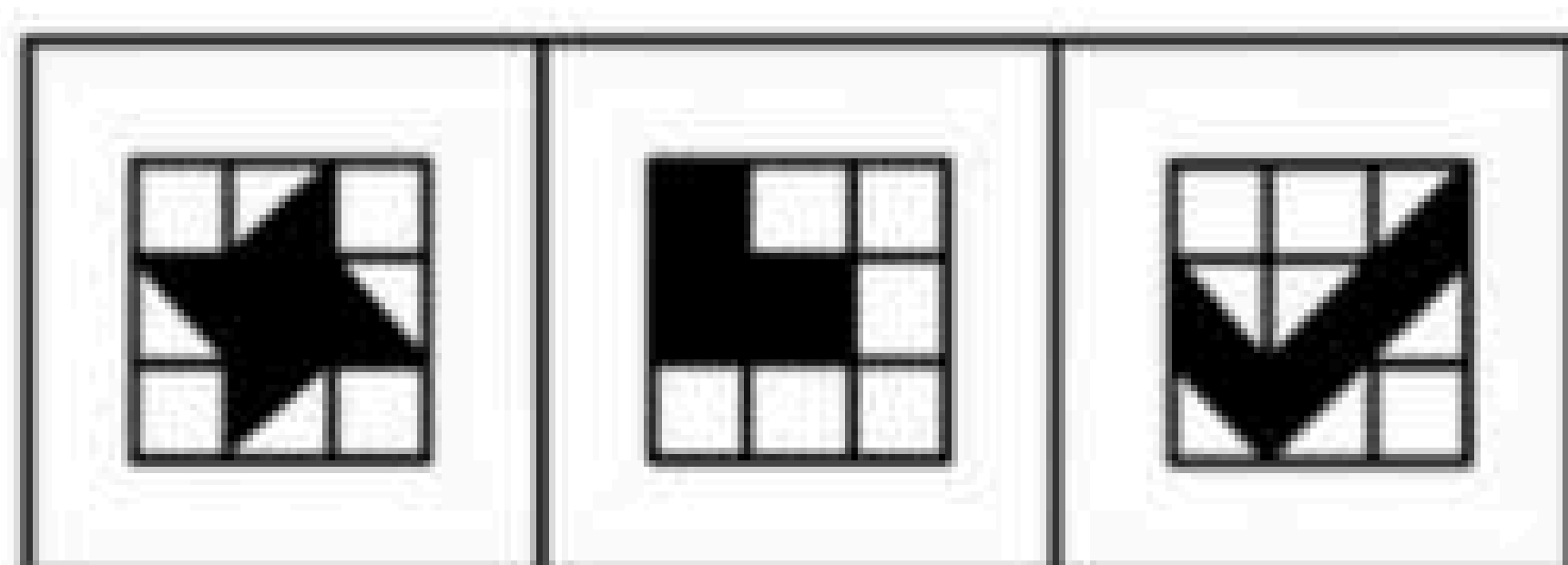


● 黑白块区分

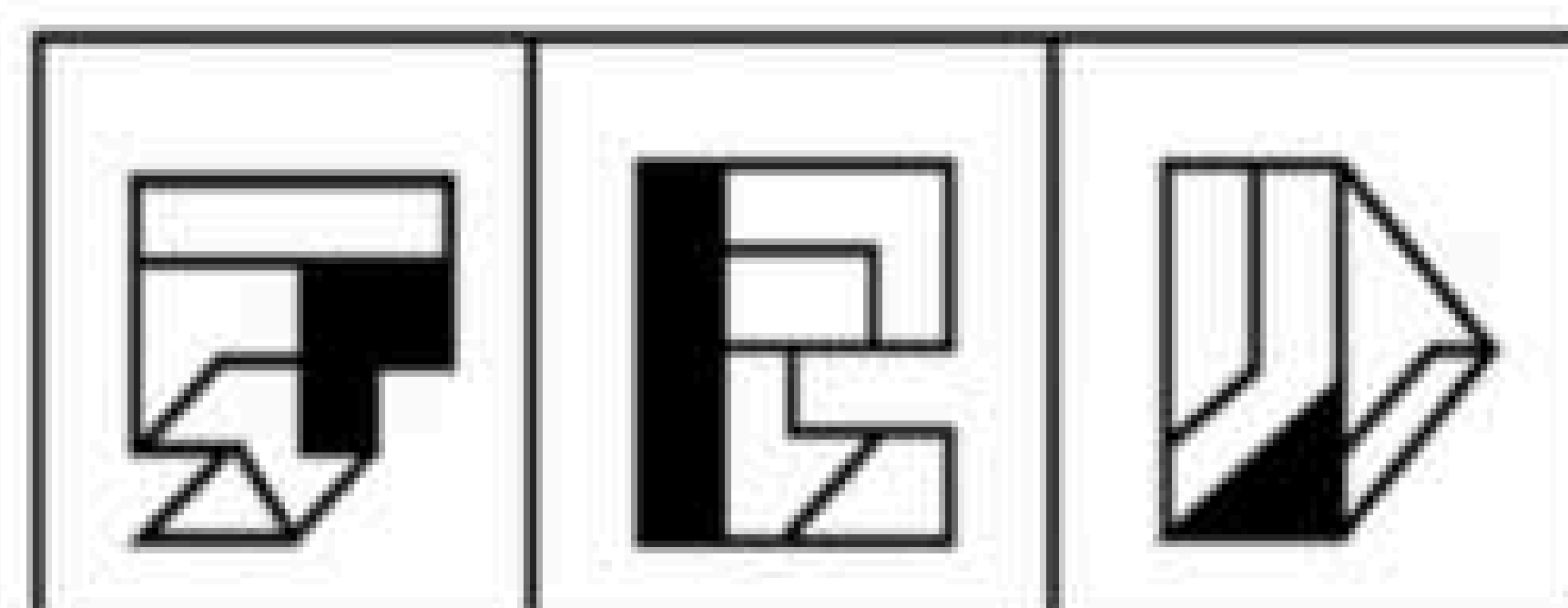
➢ 黑块被分割 (混淆点-区分)



➢ 黑白运算: 有相同部分



➢ 面积: 有网格、占比明显



➢ 面积: 1黑 (个数少)

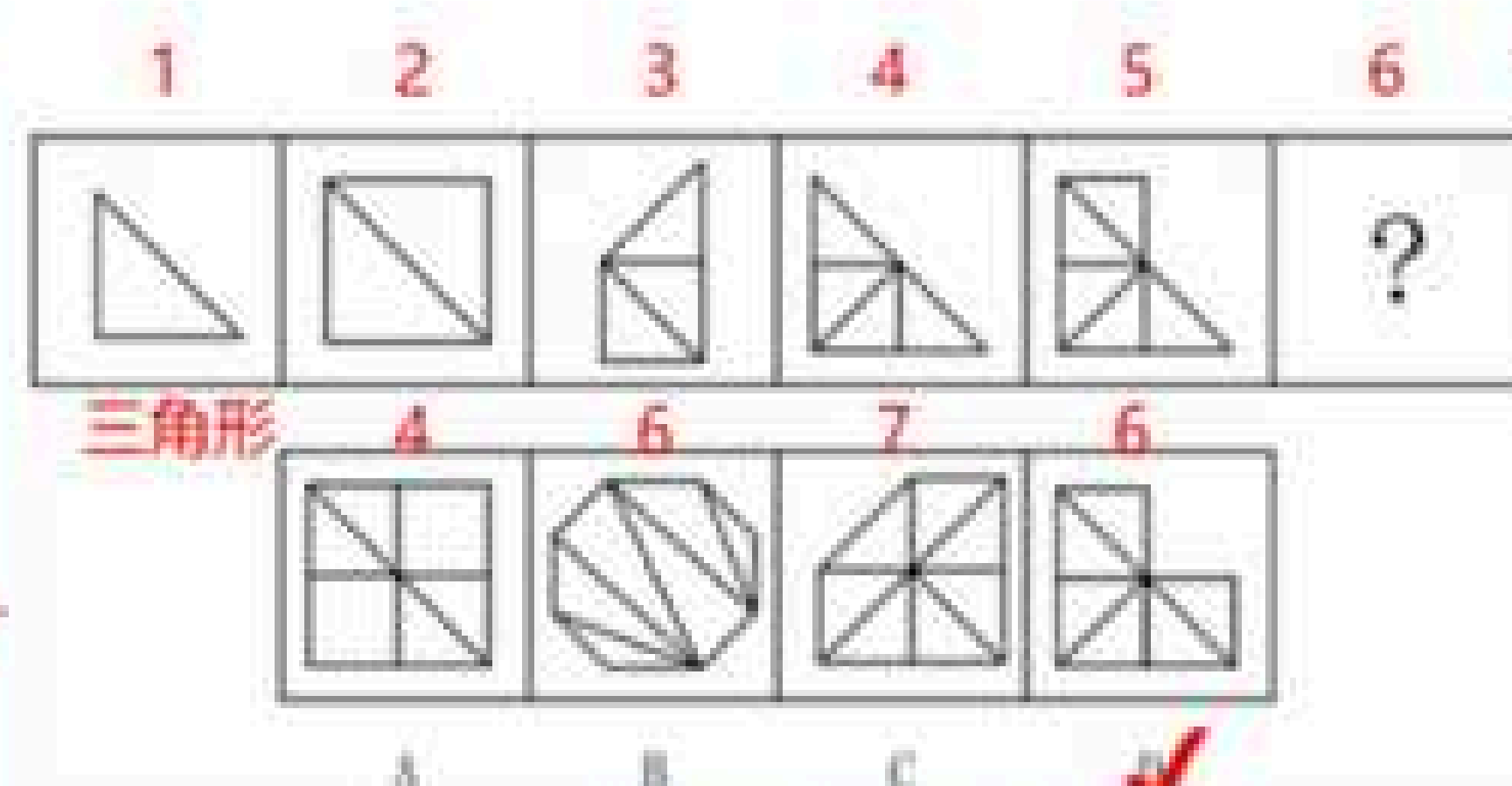
有一样的图案 (3类)



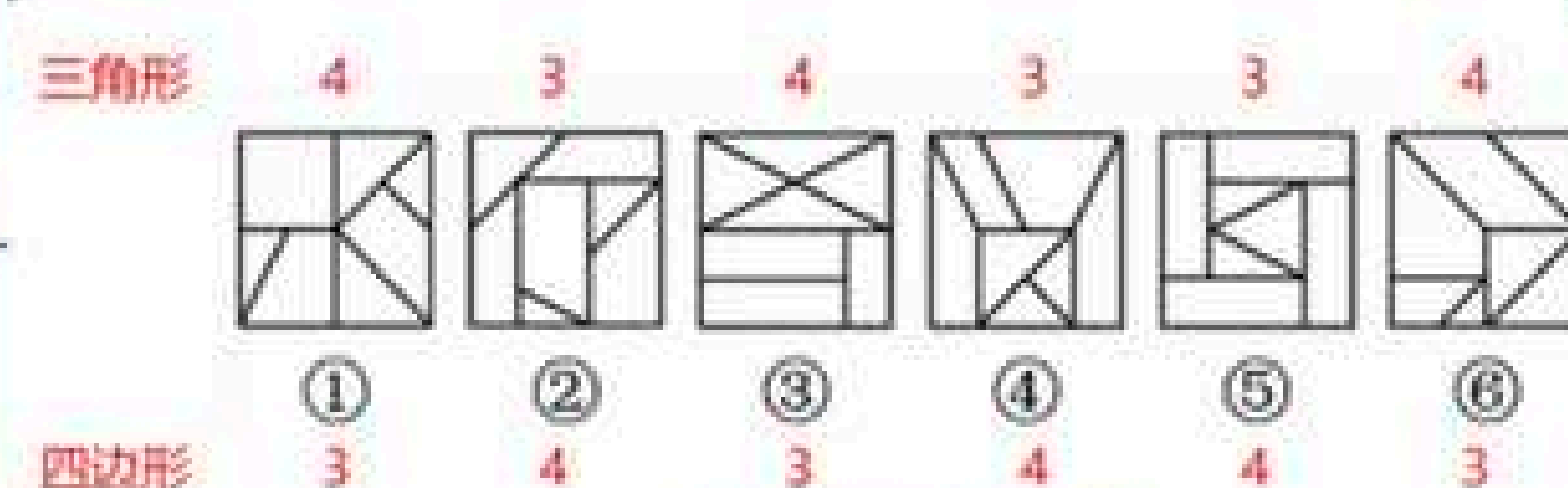
没有一样的图案 (3类)



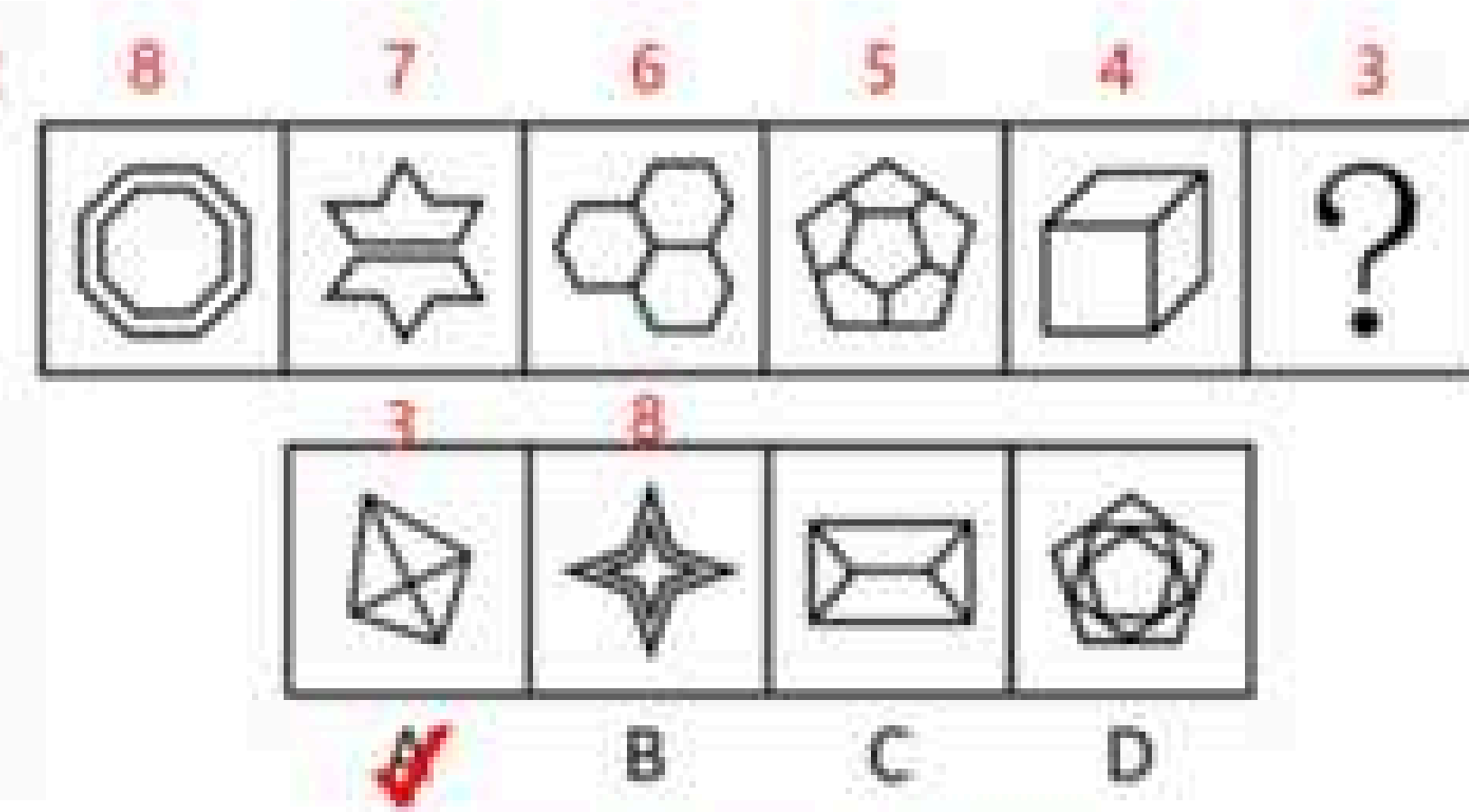
➢ 面数量-拔高小结



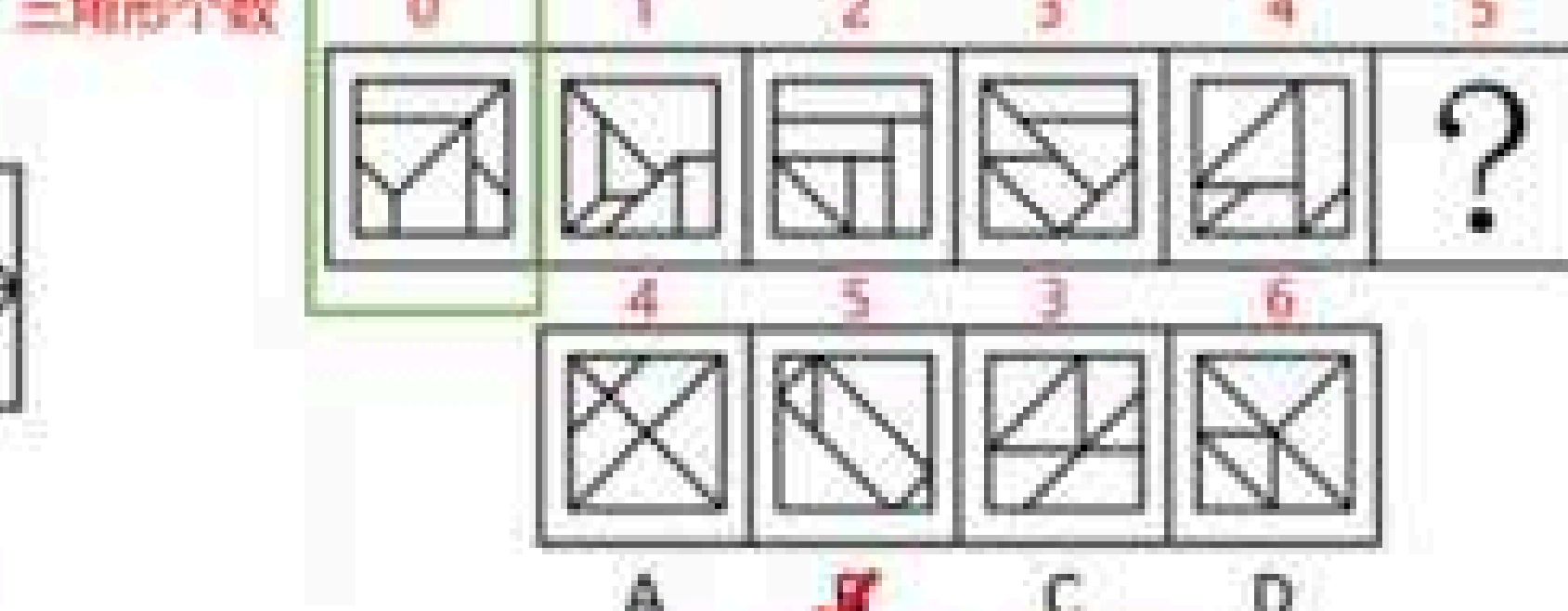
都是三角形



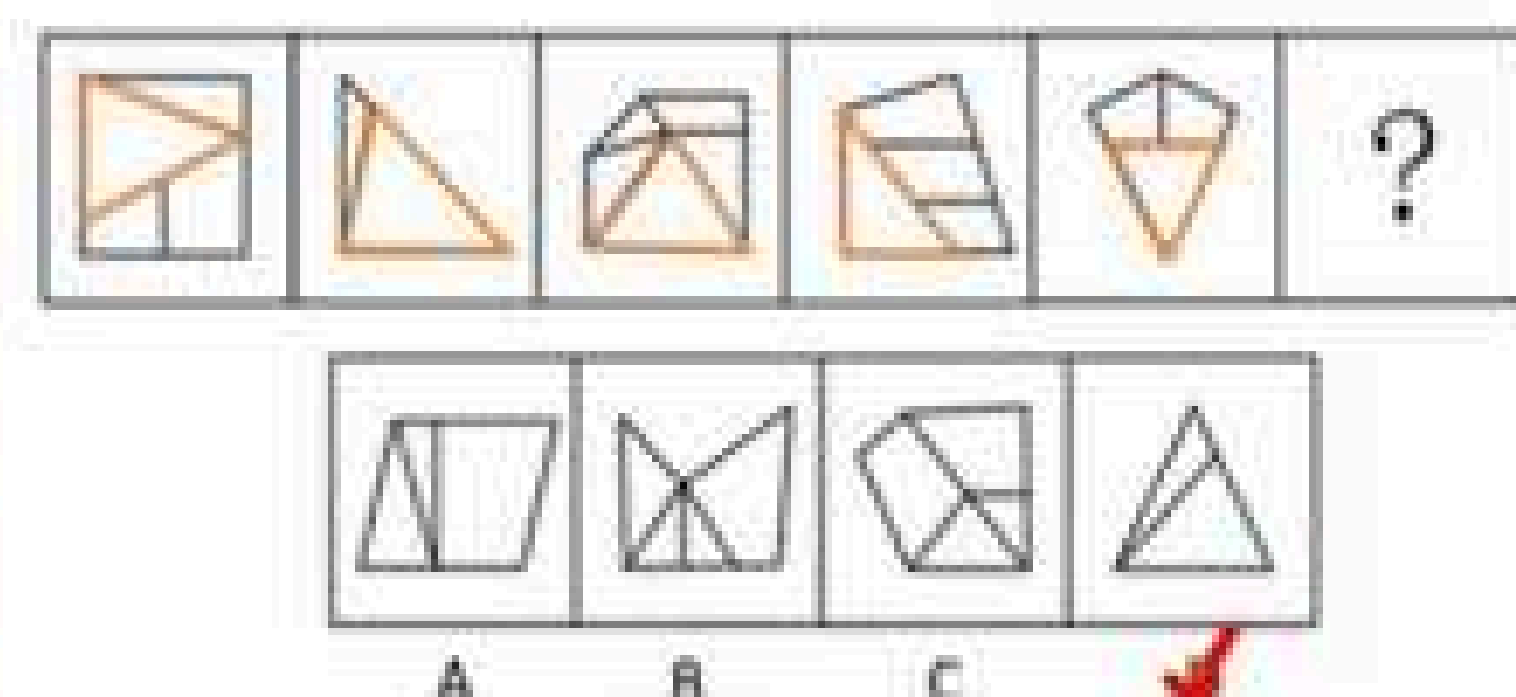
三角形-运算



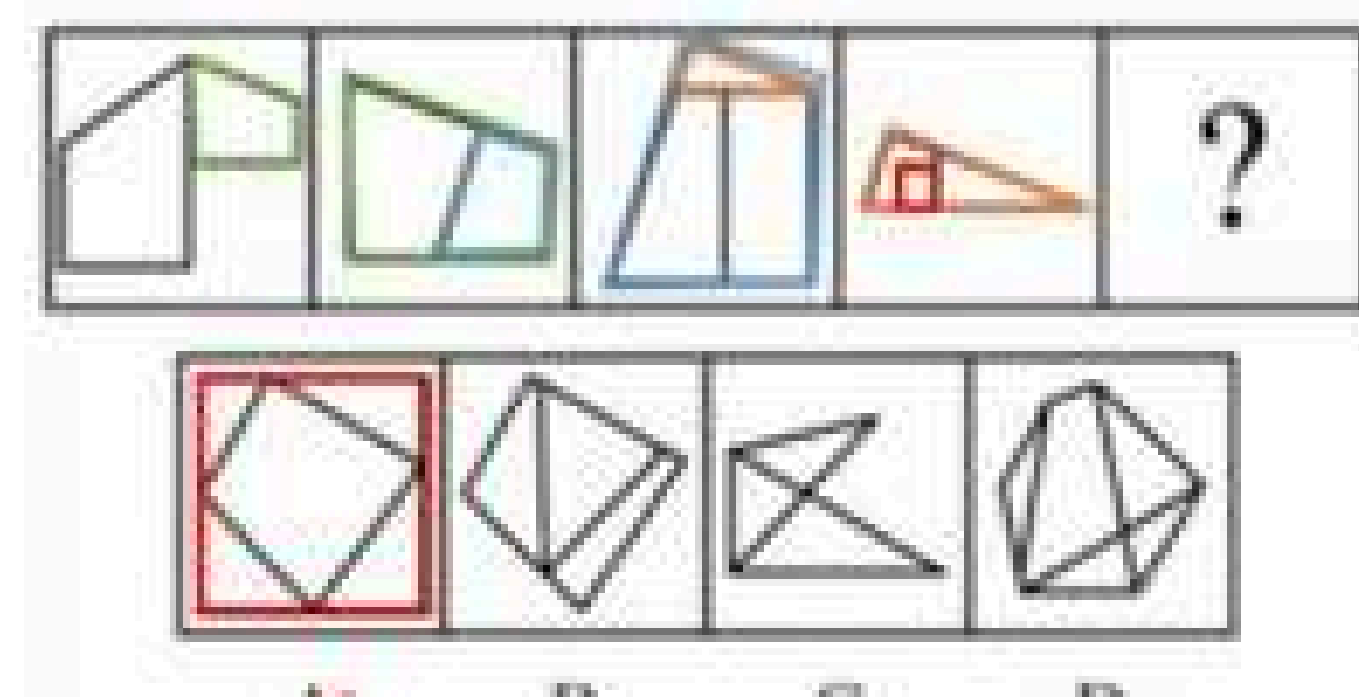
三角形-递增



三角形-单数



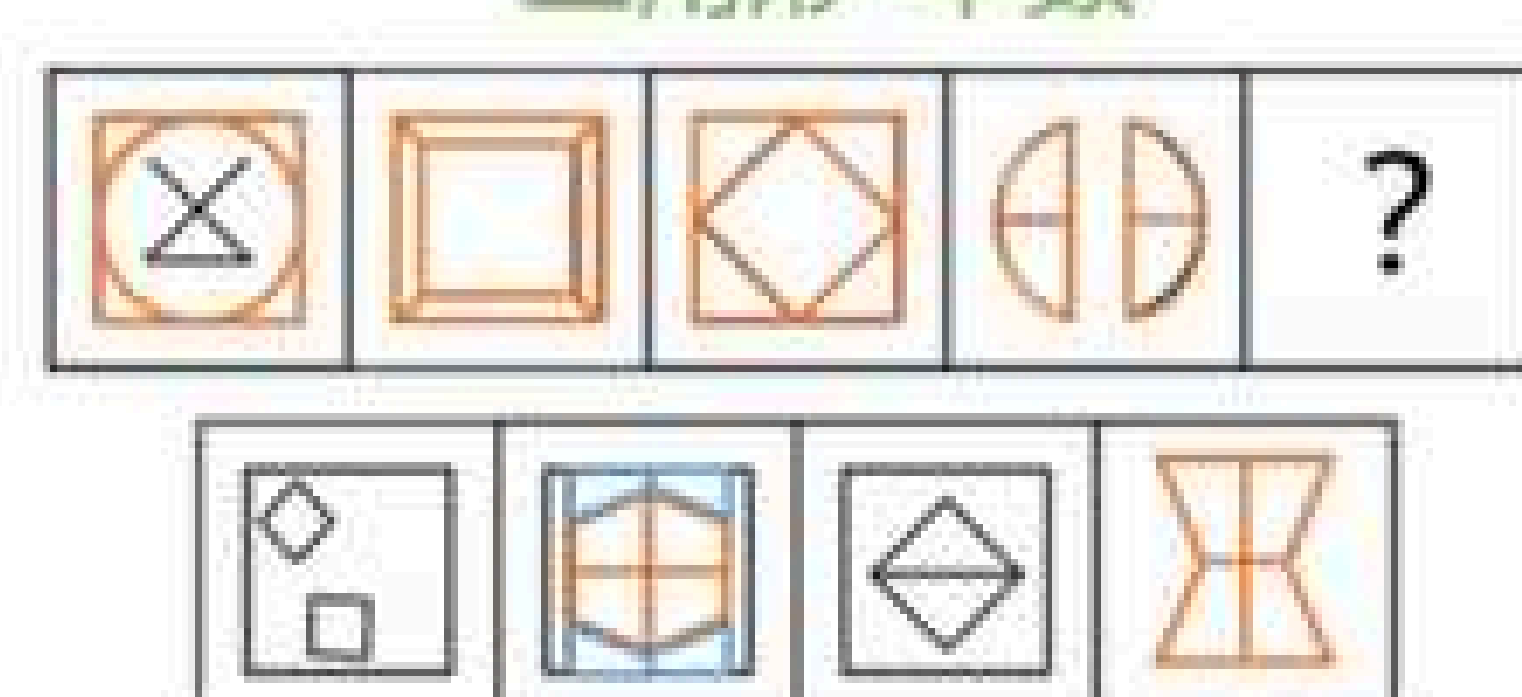
最大面-形状



最大面-与外框形状 (邻居)



最大面-对称



相同面

【数量关系】①命题者作图特点: 每幅图图案不一样

②考点: 1.面2.线3.点4.笔画5.元素6.直角

【面数量】①面的概念: 白色的、封闭的区域

②命题者作图特点: 分割、封闭、生活化

③基础考点: 面的数量、面的运算 (九宫格)

④细化考点:

1.所有面 (形状-高频: 三角形) 增加: 单数、递增、运算

2.大小面 (形状、属性、面积)

3.相同面

口诀: 所有、大小、相同+形状、属性、面积

➢ 理论速记

【面积】①命题者作图特点: 黑块被分割, 背景有网格

②考点: 面积

1.占比-1/2, 1/3, 1/4等

2.比大小-黑色面积与白色面积的比较



来源于小红书@贝栗子

2. 线数量

含义

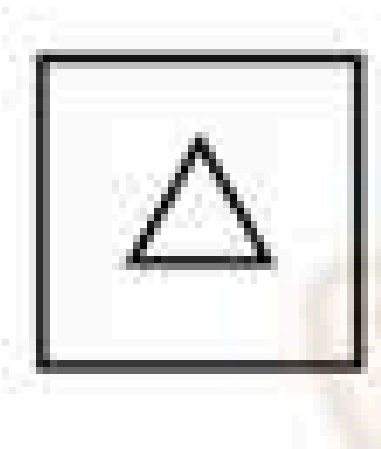
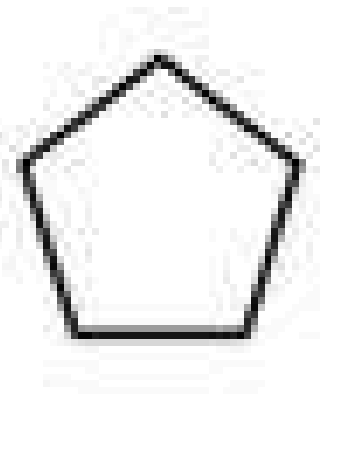
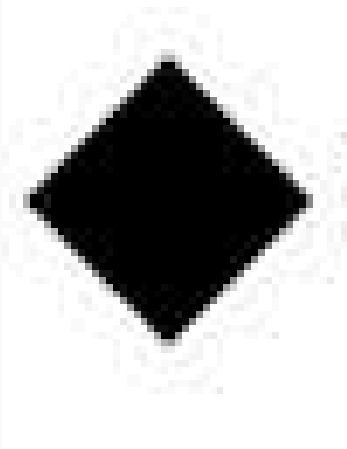
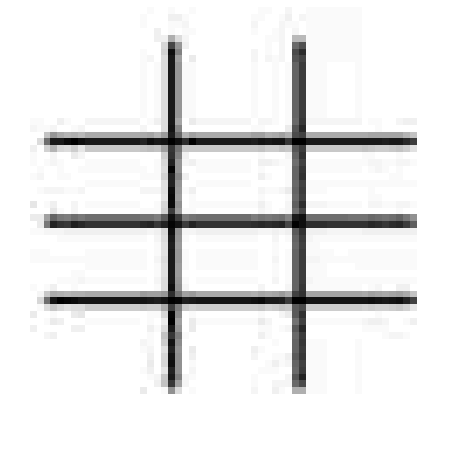
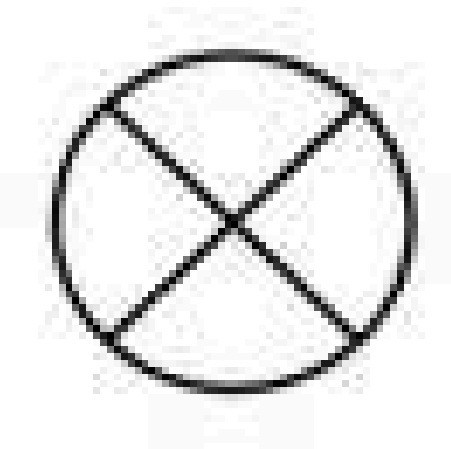
- “直线”：直线是由无数个点构成，向两端无限延长。
- “曲线”：曲线是动点运动时，方向连续变化所成的线。

作图特点

① 单一线条 ② 都有曲线 ③ 多边形

基础考点

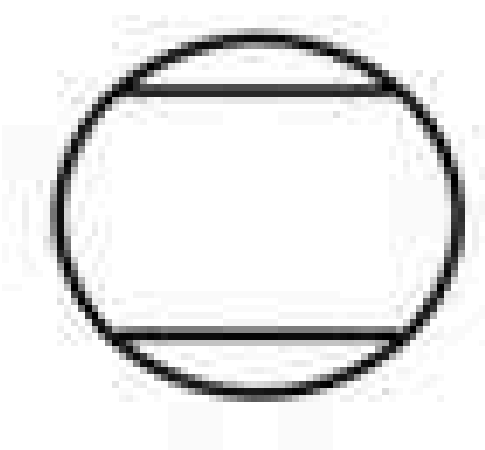
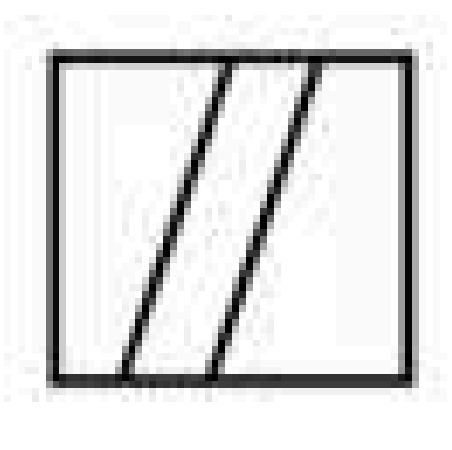
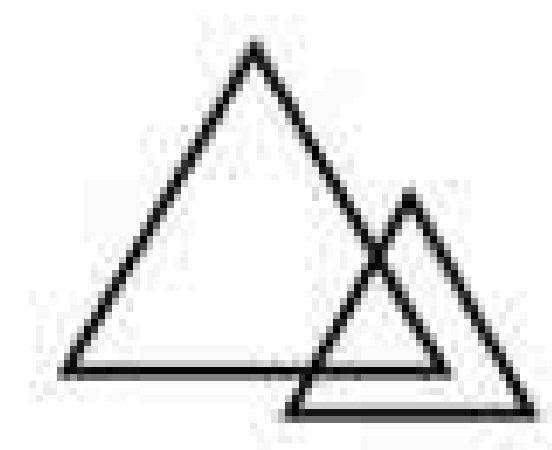
① 线的数量、② 线的运算 (相减, 倍数, 相加)



出题者作图：曲直 出题者作图：横竖 出题者作图：黑白 出题者作图：内外

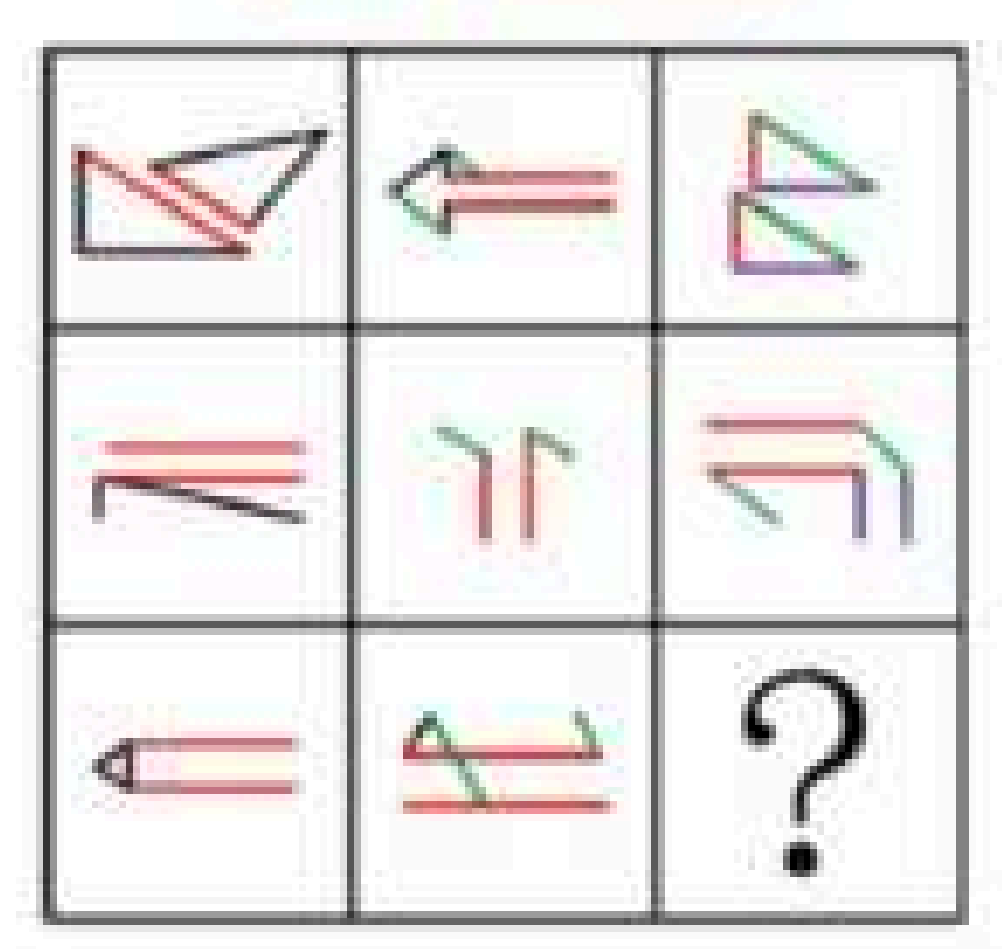
出题者作图：外框

细化考法

- (1) 平行线：//，相似三角形   
- (2) 考点形式：组数(2条平行线)，条数(>2条平行线)

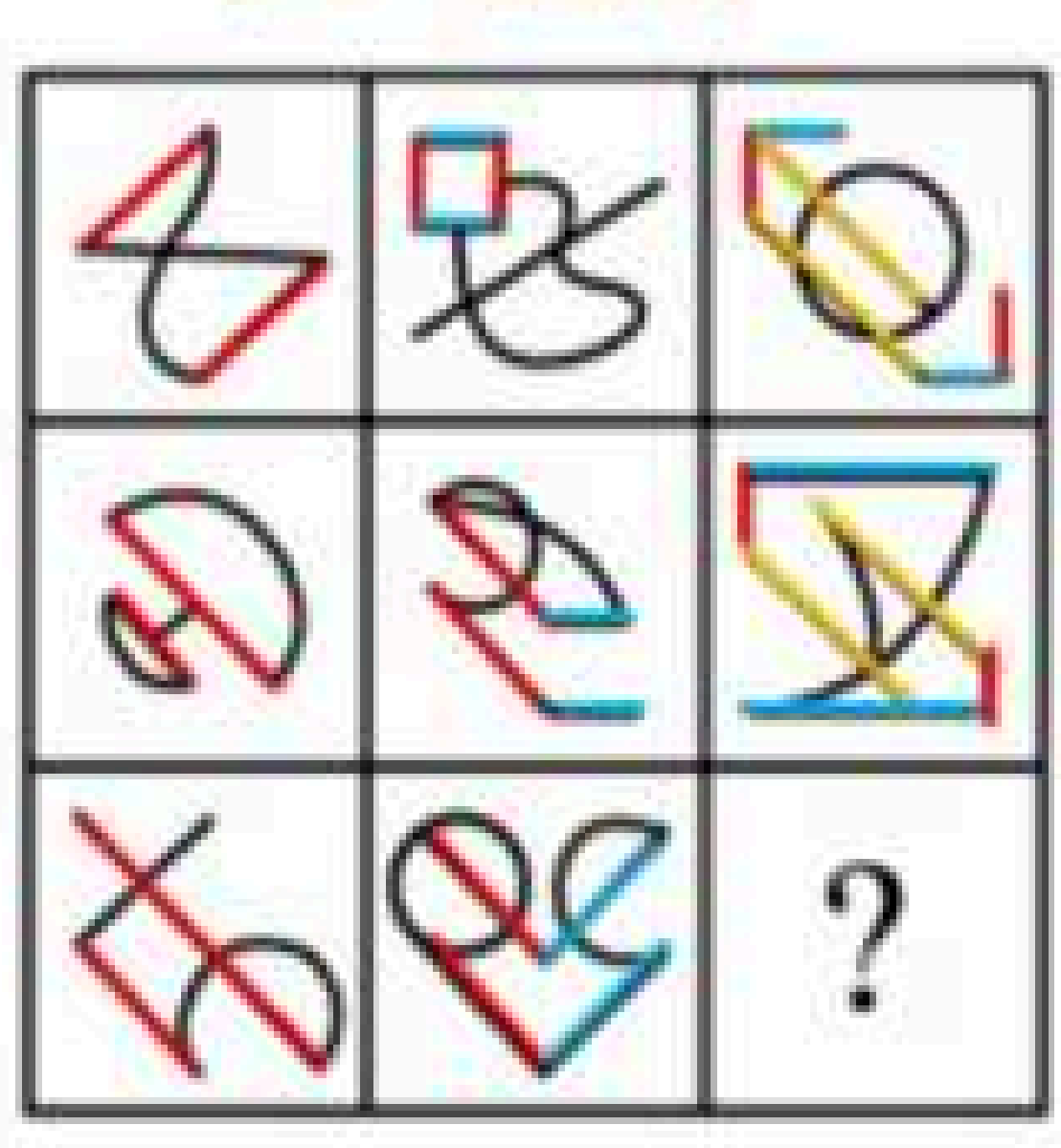
➤ 出题者画平行线的“小心思”

(2019青海)

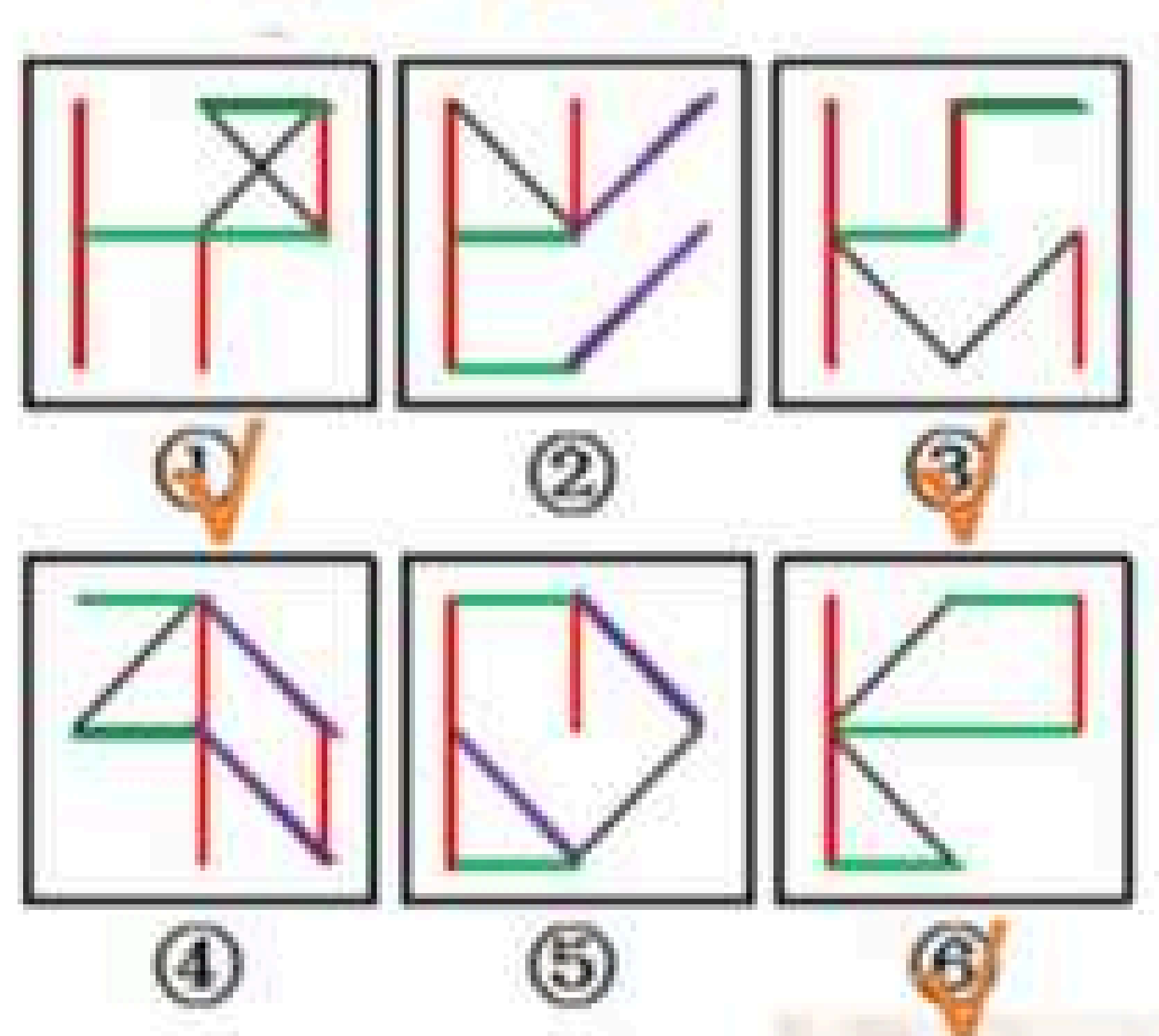


A B C D

(2019四川)

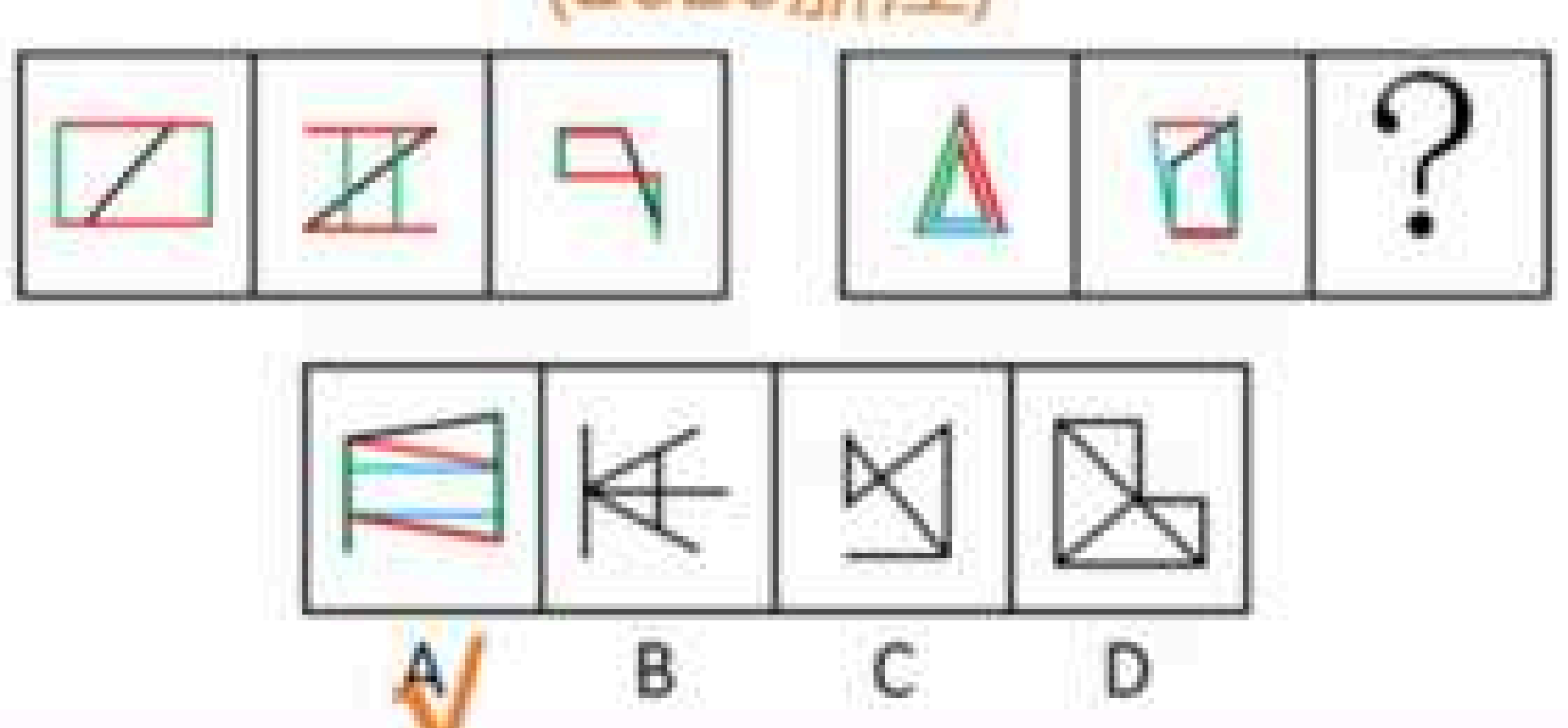


(2019联考)



① ② ③ ④ ⑤ ⑥

(2020浙江)



A B C D

➤ 出题者作图：//，相似三角形

➤ 考点形式：① 组数 (2条平行线) ② 条数 (>2条平行线)

多边形外框混淆 小红书：@贝栗子

外框① 6 4 5 3 5 ?

外框② 6 4 5 3 5

外框③/② 4/8 7/7 9/7 4/3

A B C D

②图形关系：相交线-数量

1 2 3 4 5 6

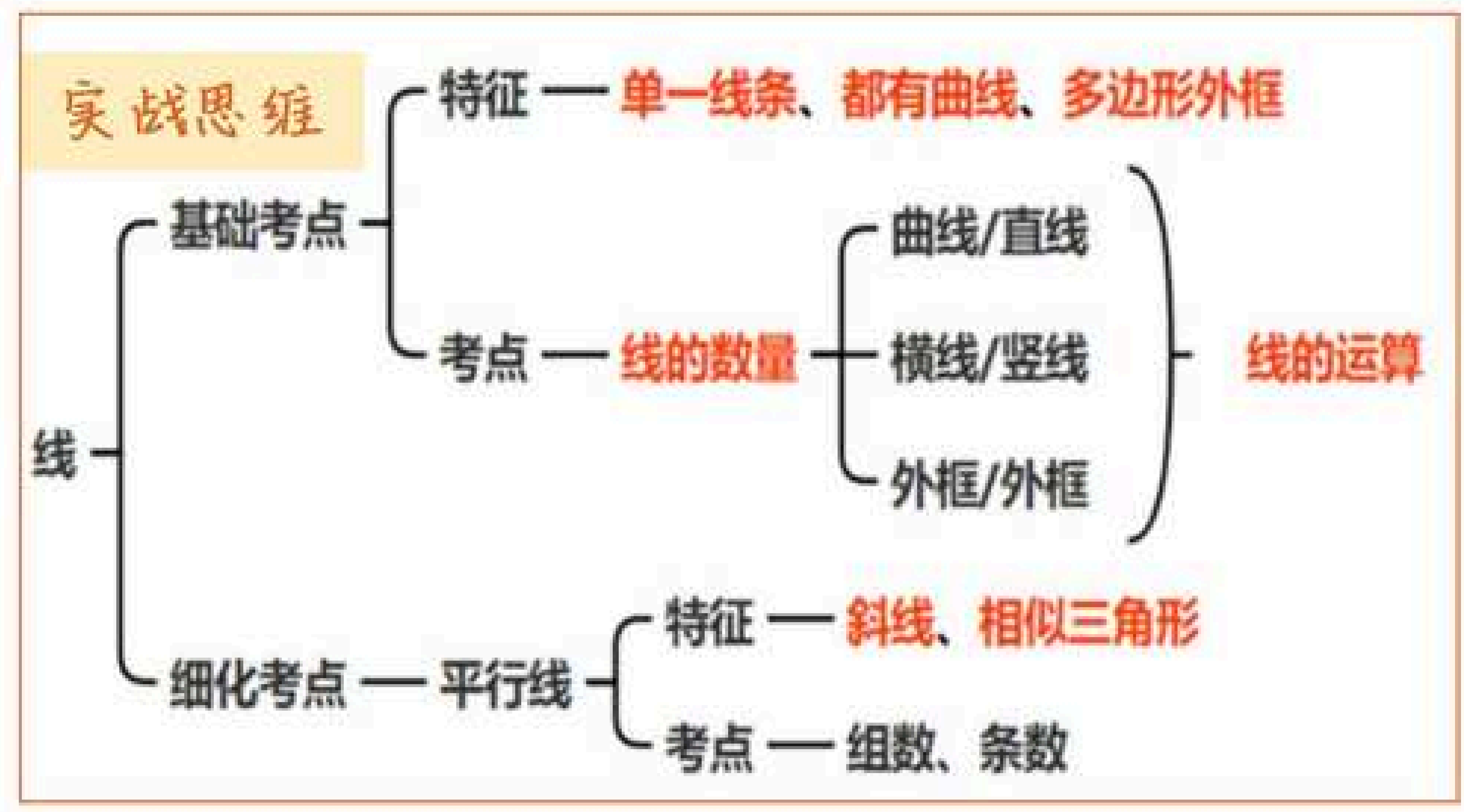
A B C D

①线数量

③对称轴

A B C D

线数量-小结



外框① 6 4 5 3 5 ?

外框② 6 4 5 3 5

外框③/② 4/8 7/7 9/7 4/3

A B C D

曲线 2 2 2 2 2 ?

直线 7 7 7 7 7 ?

A B C D

平行线 2 2 1 1 1 2

① ② ③ ④ ⑤ ⑥

理论速记

【线数量】

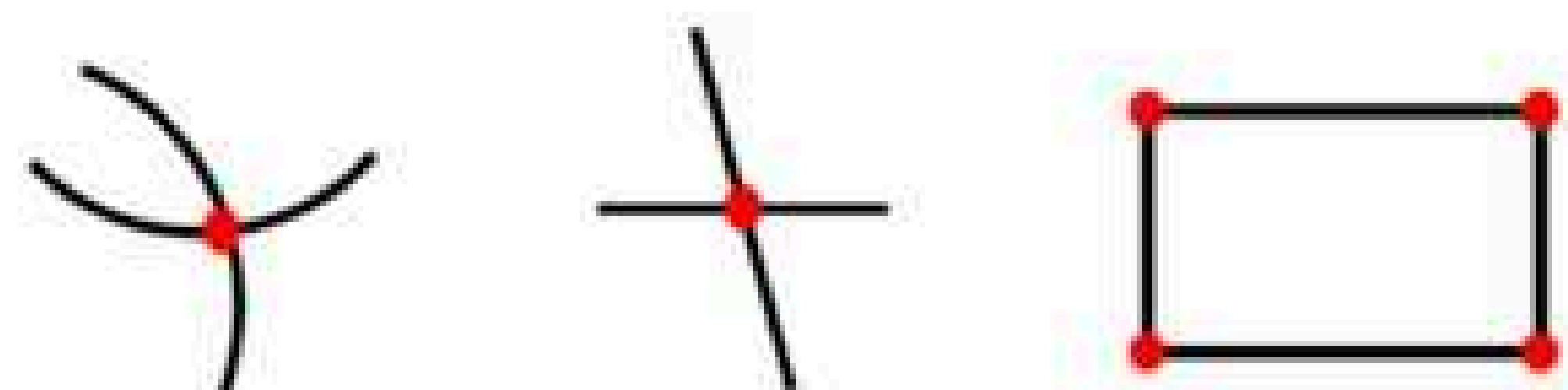
- ①怎么数线？看是否有明显的拐点（方向是否变化）
- ②命题者作图特点：
 - 1. 直线数：多边形外框、单一直线
 - 2. 曲线数：都有曲线、单一曲线

- ③基础考法：线的数量、线的运算
 - 1. 曲线与直线的运算
 - 2. 框与框之间的运算
 - 3. 横线与竖线的运算
- ④细化考法：平行线（永不相交的两条线）
 - 1. 命题者作图特点：斜线，相似三角形
 - 2. 考点：组数（2条平行线），条数（>2条平行线）

3.点数量

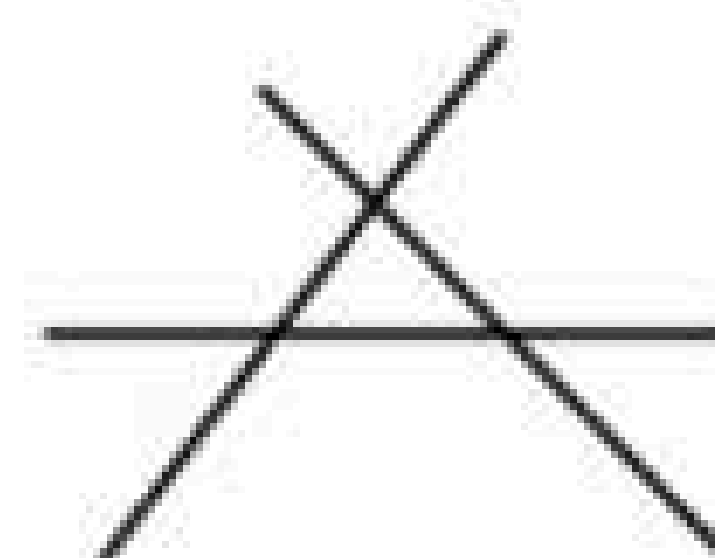
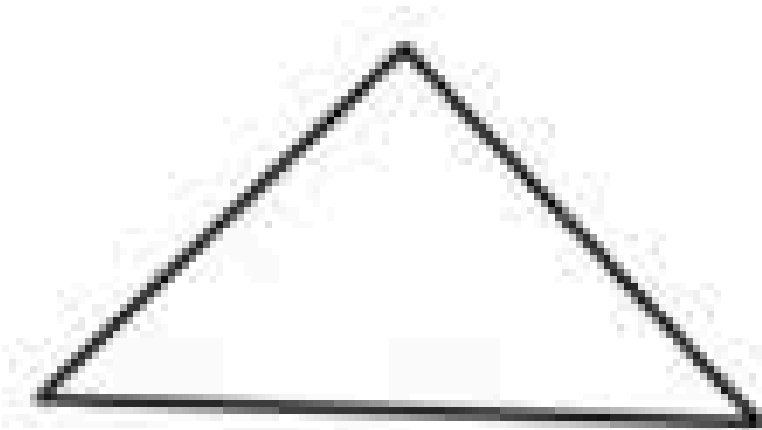
含义

作图特点



线与线相交的位置(即:交点)

提示: “端点”不是“点”



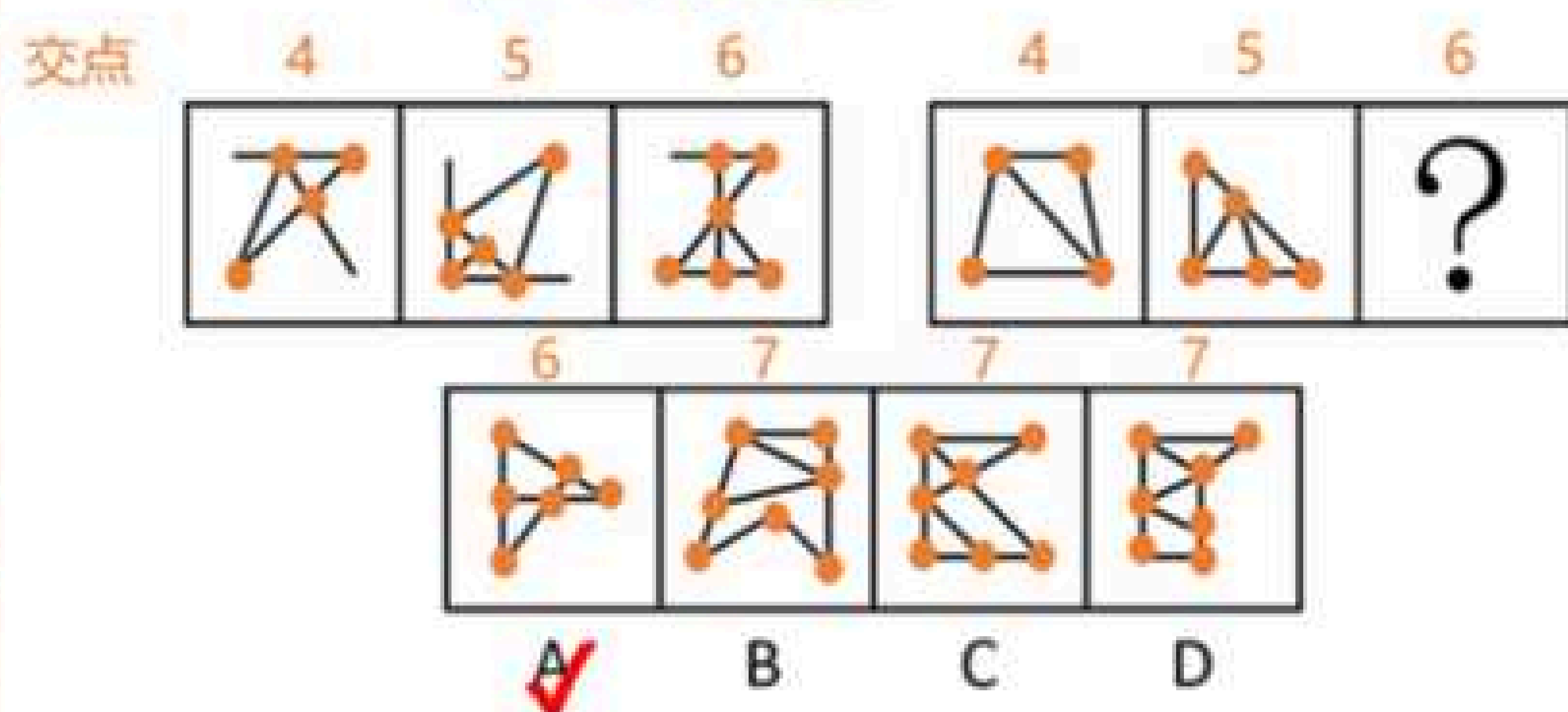
①面的特征 ②多端点【笔画没规律,再考虑点】

实战思维



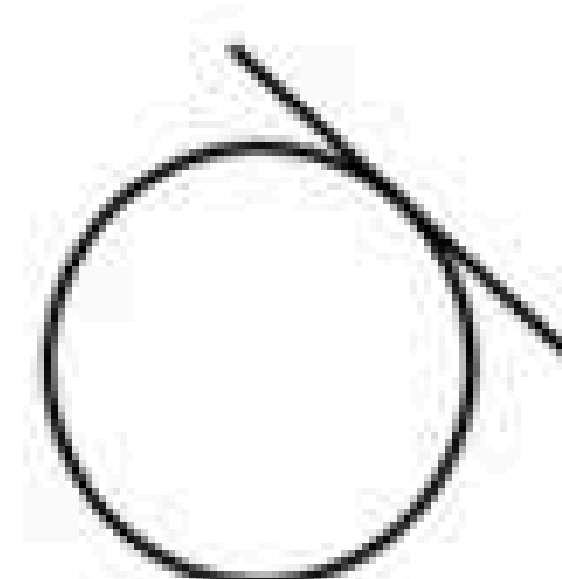
基础考点

点的数量

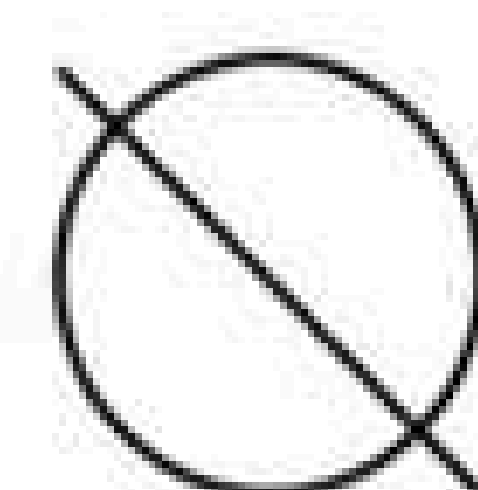


细化考点

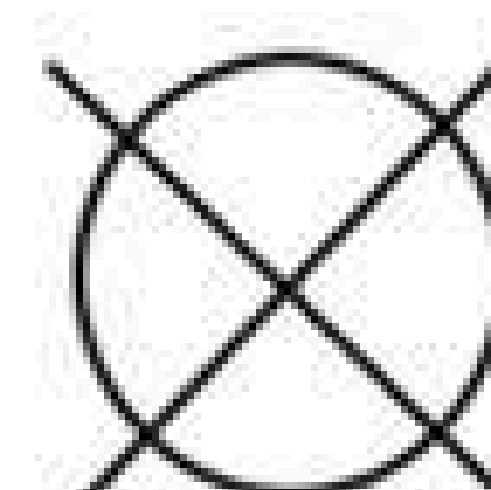
(1) 切点 (2) 框点 (3) 曲直交点



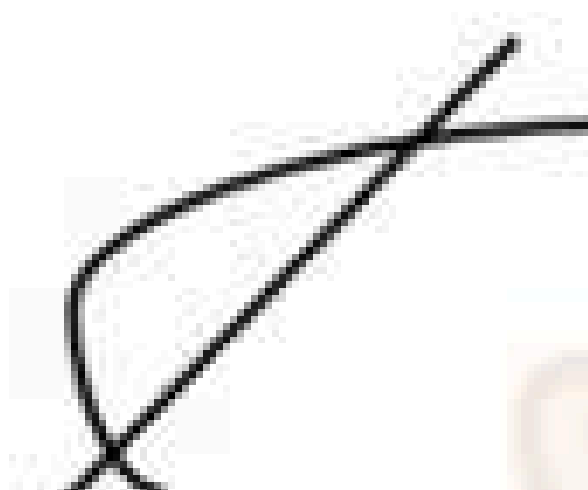
切点



框上点

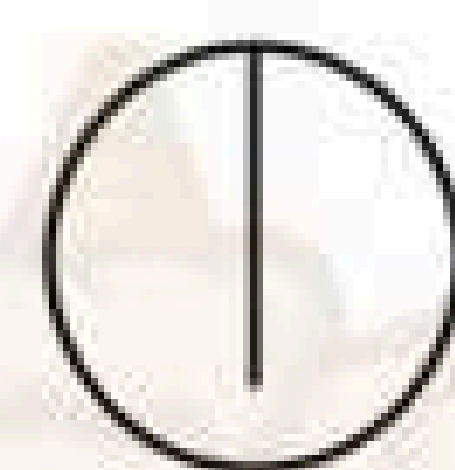


框内点

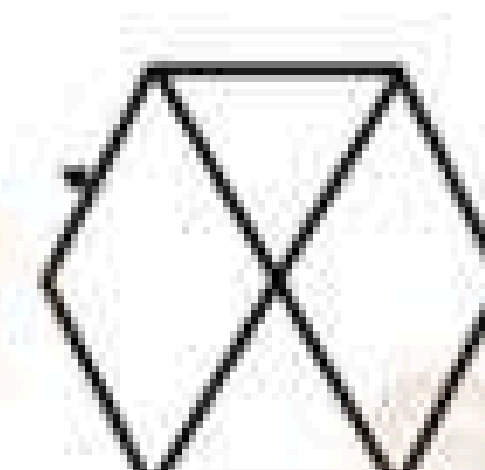
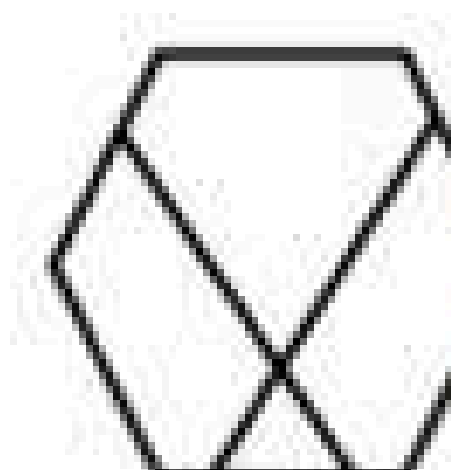
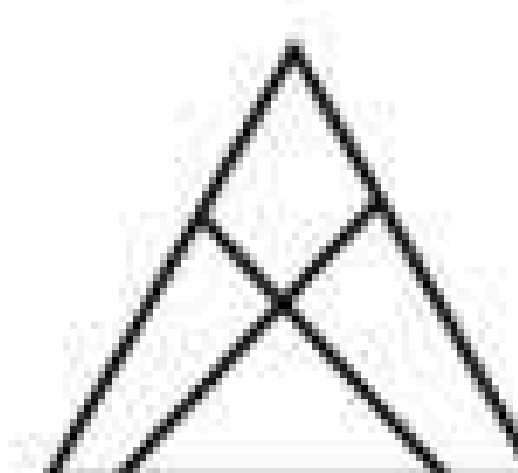
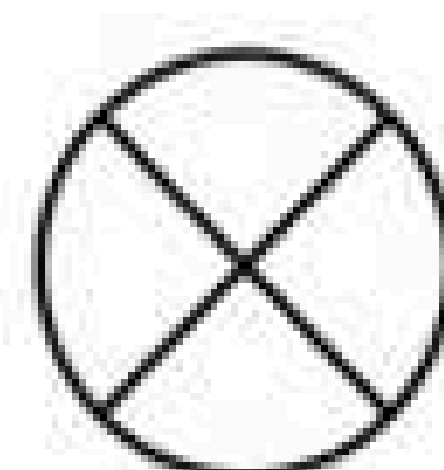


曲直交点

易错点



出题者作图: 均有“曲线”→ 圆形, 非圆形



刻意

出题者作图: 框也可以是多边形 (难度大)

混淆: 框上点: 一般指内部线条与外框的交点

解题思路: 每幅图图案不同 → 属性

属性

- 对称性 (规则)
- 曲直性 (曲线) -
- 开闭性 (生活化)

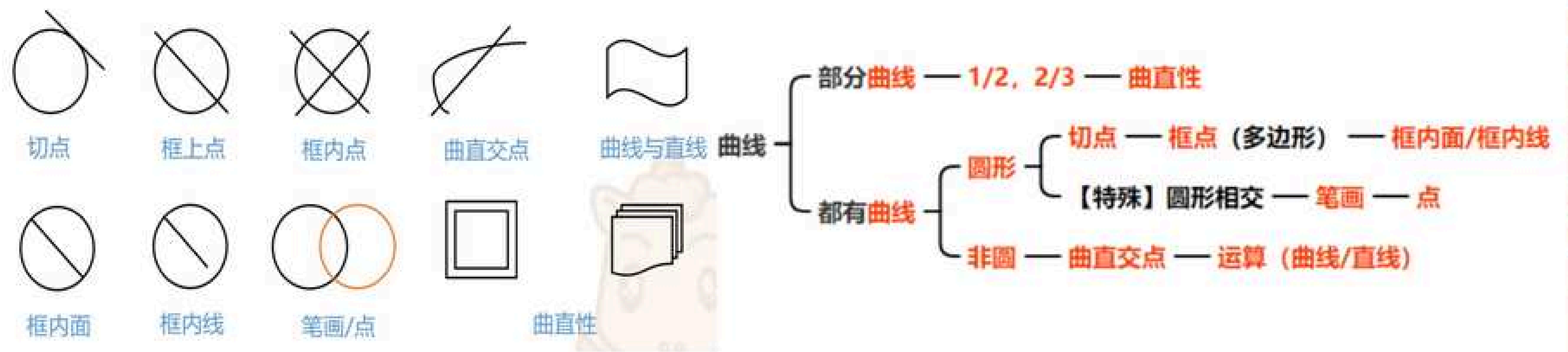
数量

数量

- 面 (分割、封闭、生活化)
- 线 (单一、曲线、多边形)
- 点 (面特征、多端点)

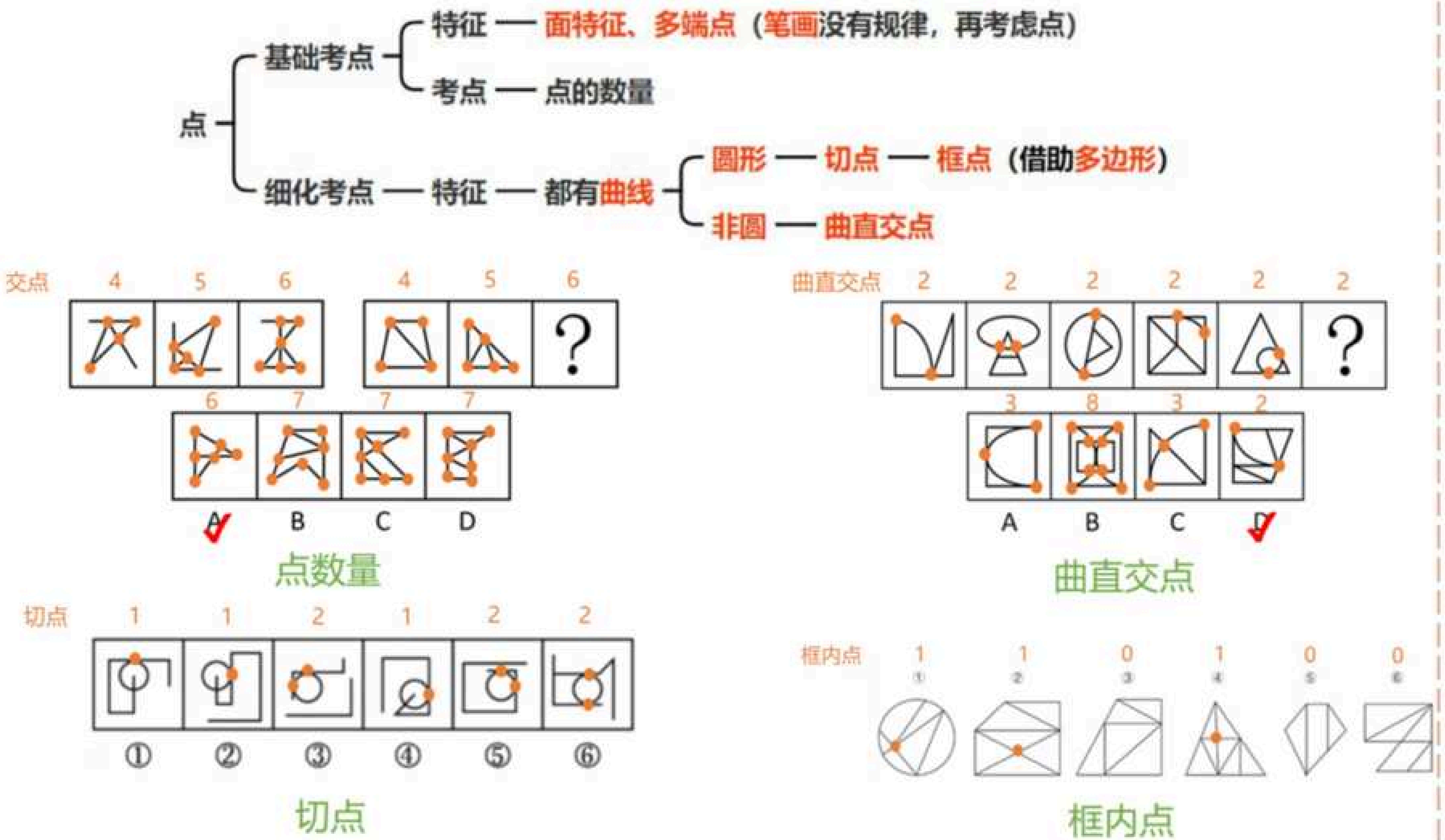
线特征 > 面特征 > 点特征

◆ 出题者画曲线 “小心思”



小红书：@贝栗子

➤ 点数量-小结



➤ 理论速记

【点细化】

①点的概念：线与线相交的位置（即交点，端点不是点）

②基础考点：点的数量

命题者作图特点：面特征、多端点（笔画没有规律，再考虑点）

③细化考法：

1.命题者作图特点：都有曲线

2.答题思路：

圆形→切点→框点

非圆→曲直交点

难点提示：利用“多边形外框”考查“框点”



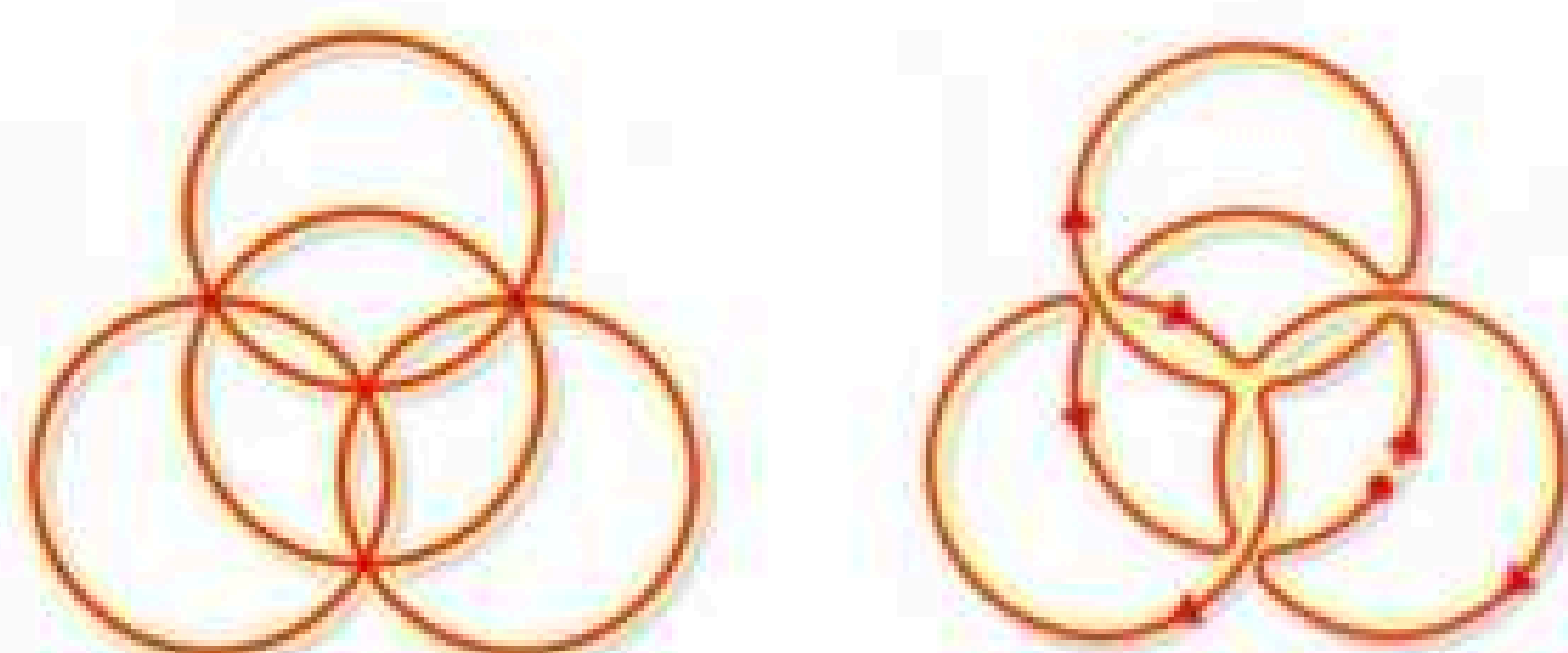
第五节：数量规律-笔画，元素，角

4. 笔画

含义

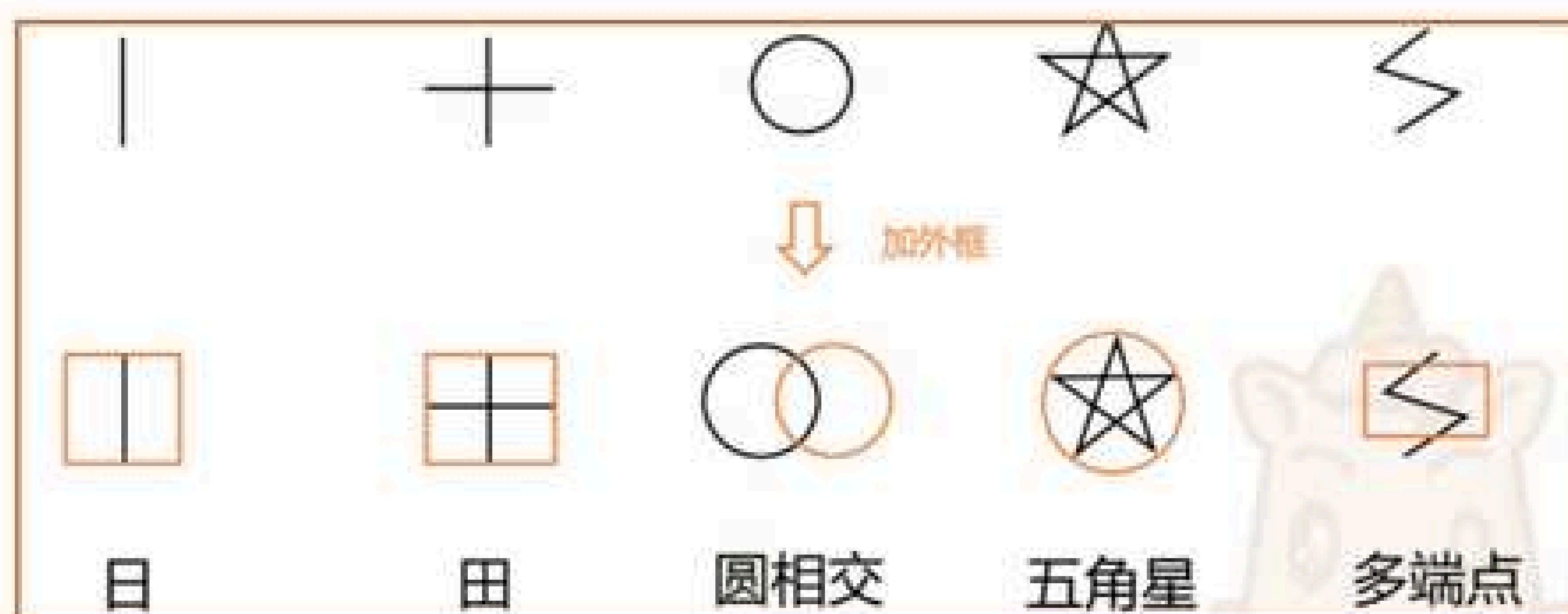
在不能重复的情况下，能够一笔画成

提示：“点”可以重复“走”

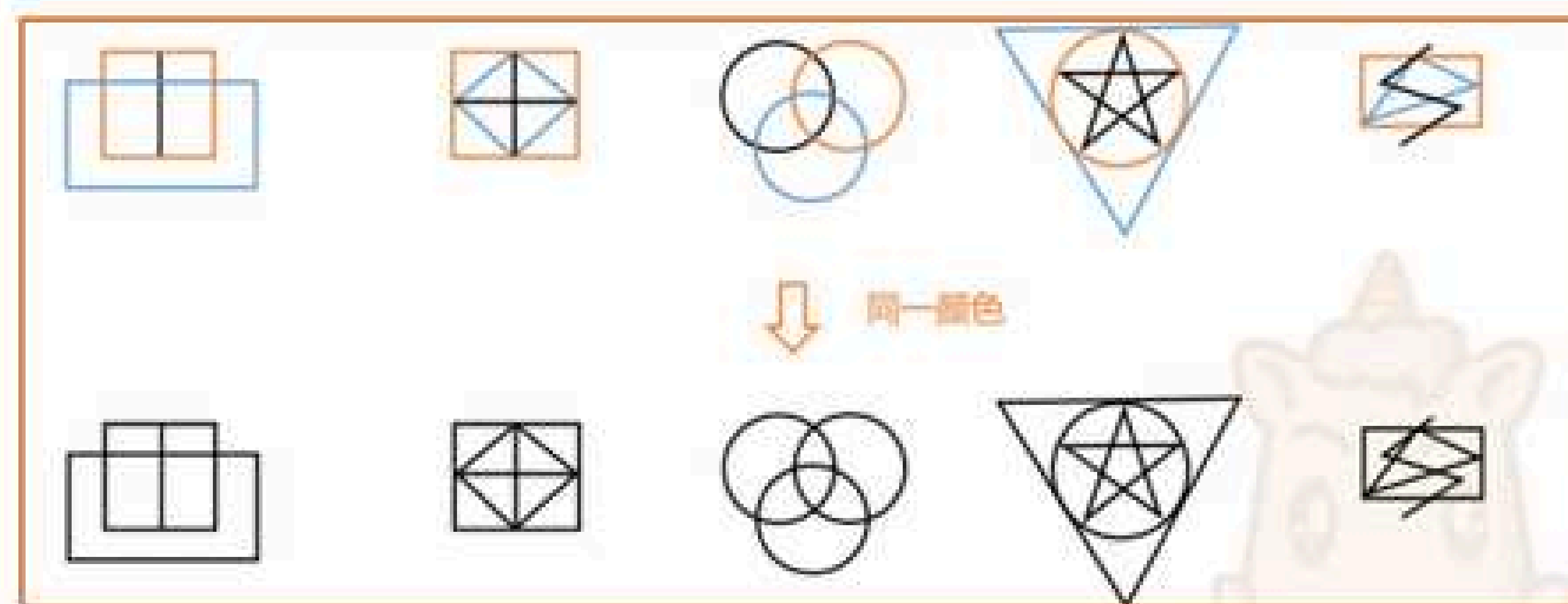
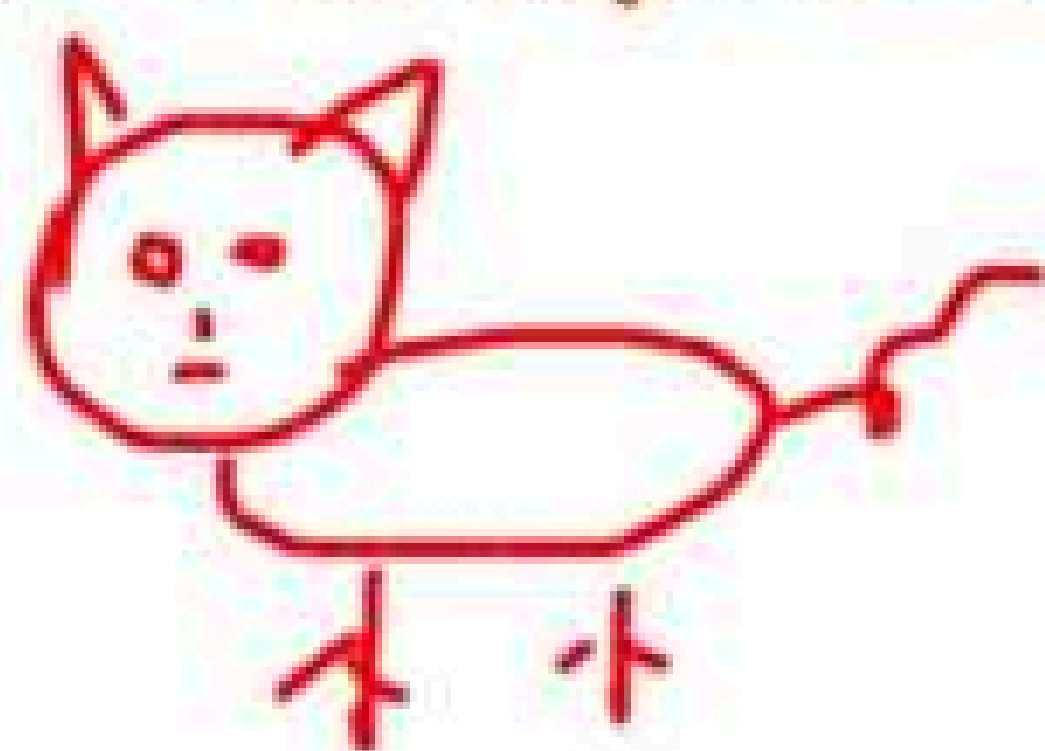


作图特点

旧版本特征 → 日、田、圆相交、五角星



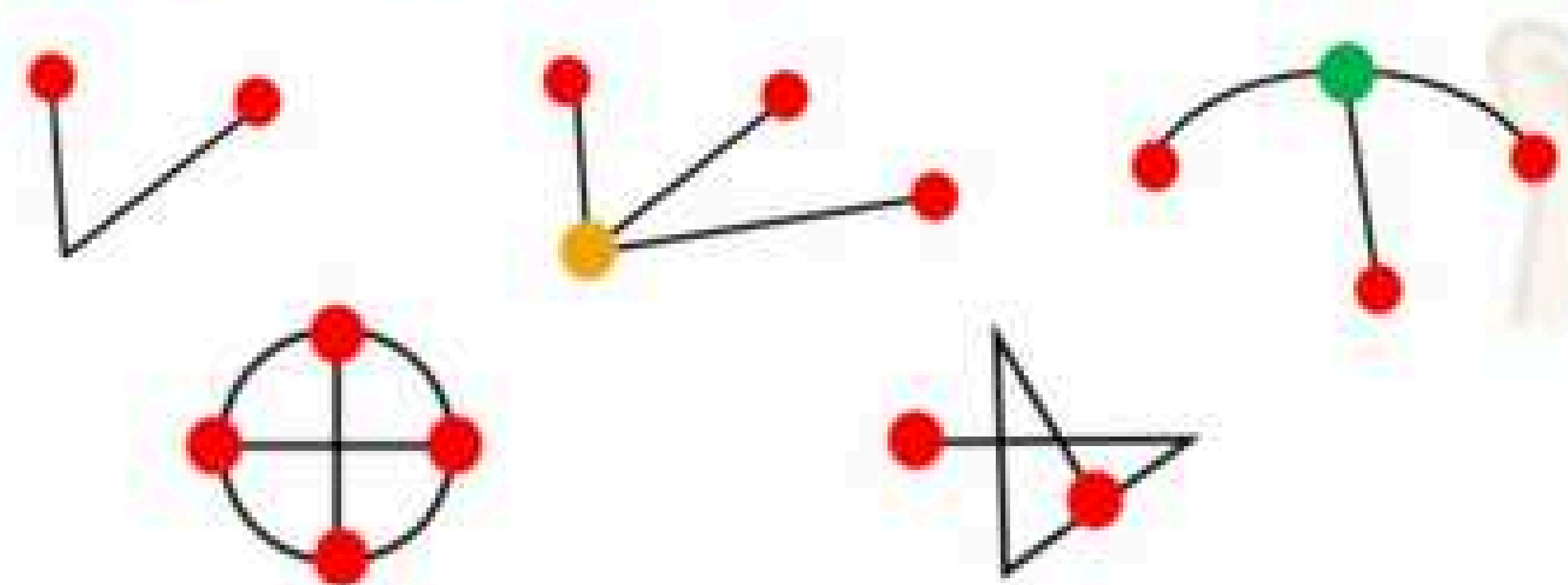
最新趋势 → 多端点，面特征，生活化



方法---数奇点

(奇点：以一个点为中心，发射出奇数条线)

- 怎么判断一笔画？
 - (1) 线条之间连通
 - (2) 奇点数量为 0 或 2

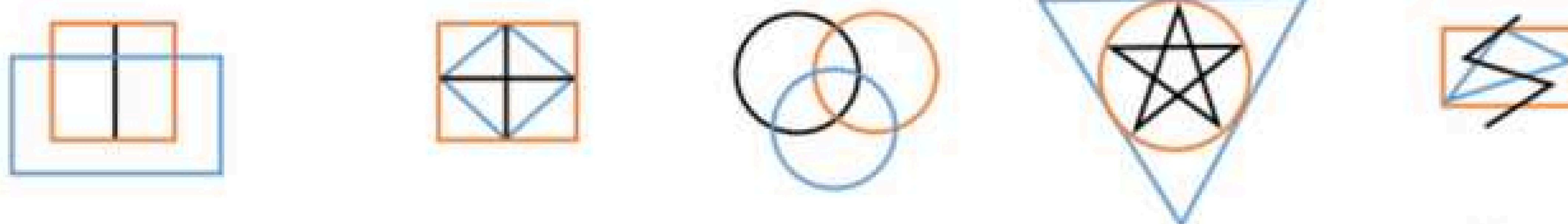


- 怎么判断多笔画？
 - (1) 笔画数 = 奇点数 / 2 (奇点数一定是偶数)
 - (2) 不连在一起的，记得相加

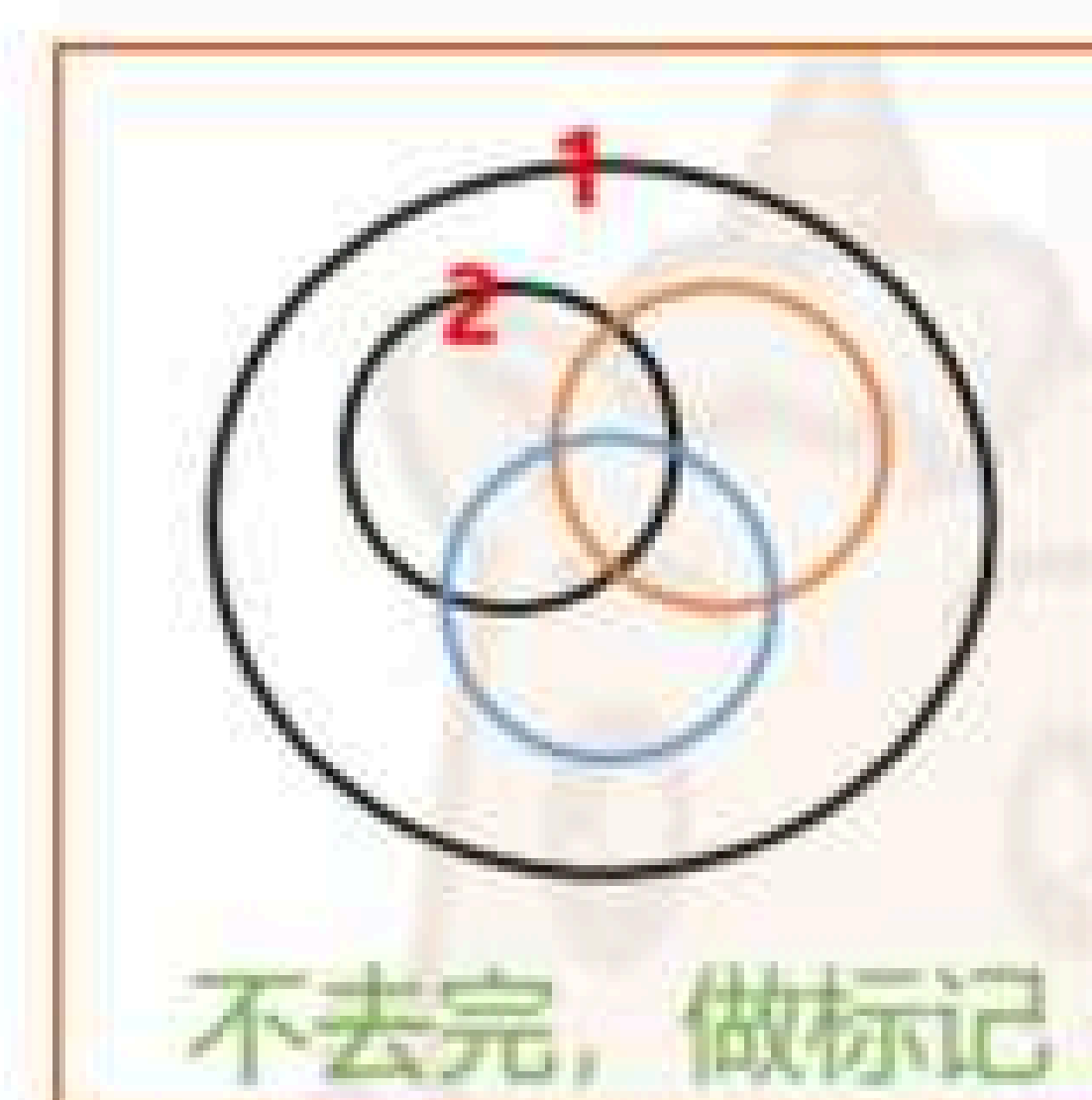


方法---去框法

“外框”不影响笔画数



- ① 外框：从一个点出发，回到原点，路径不唯一。
- ② 优先去最外面的框，再去剩下的，更清晰
- ③ 去完后没有图案，还是一笔画
- ④ 没有连在一起的外框，不能去，算独立的一笔



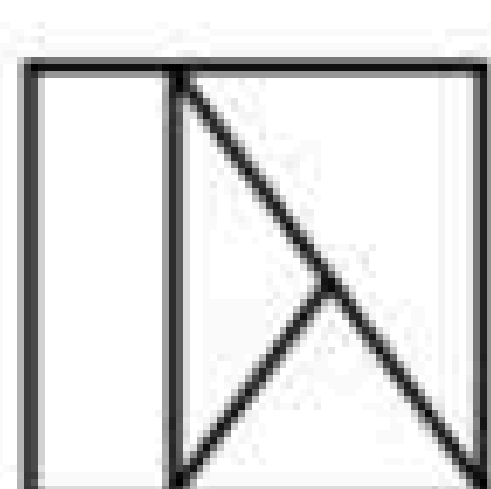
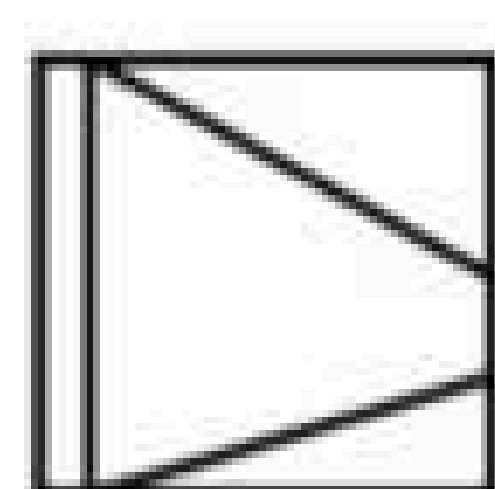
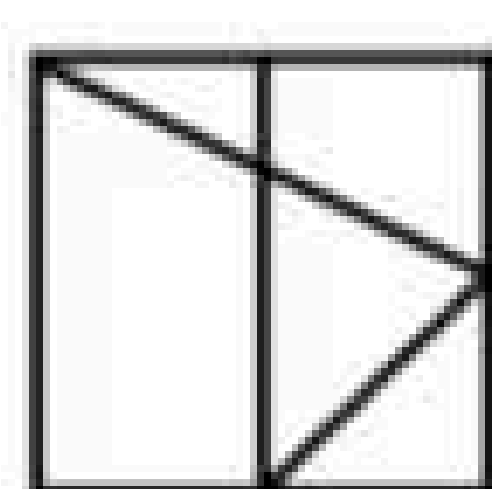
破解出题者“小心思”

4.笔画

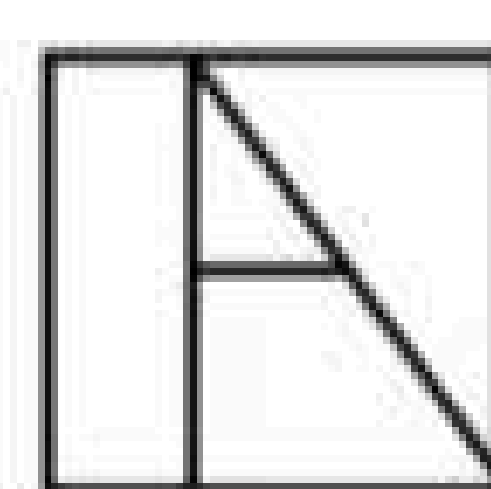
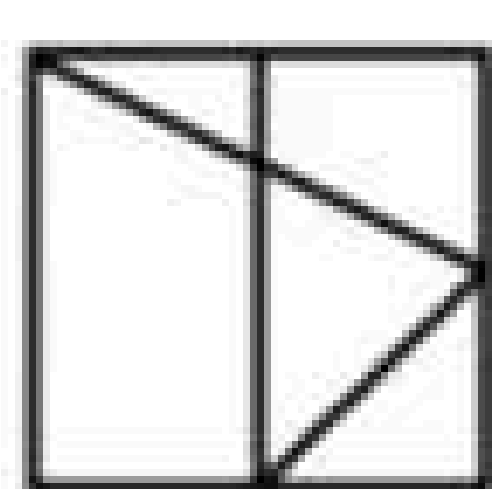
加密1

◆ 破解出题者“小心思” 面、笔画、点混淆

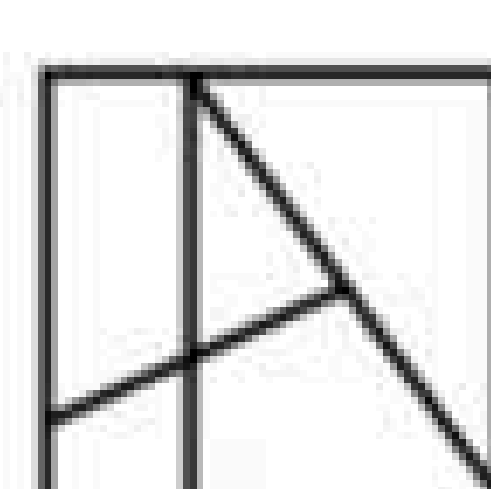
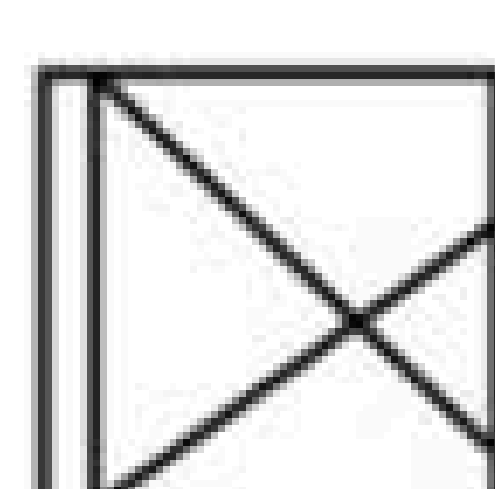
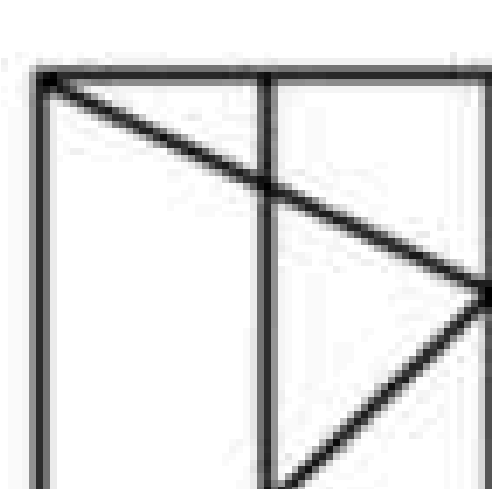
加密:



均为1笔画



均为8个点



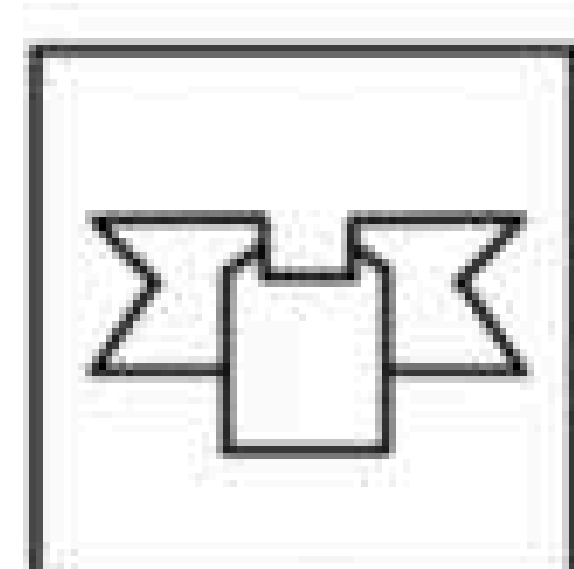
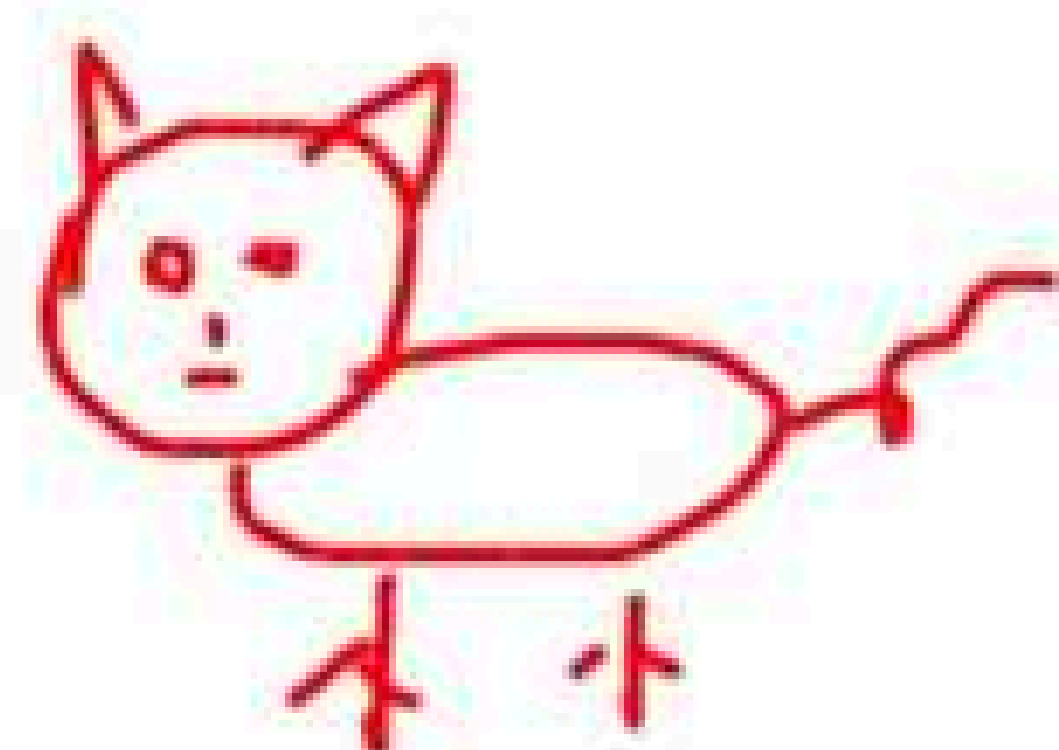
均为5个面

解密: 面 → 笔画 → 点 (高频排序, 动态调整)

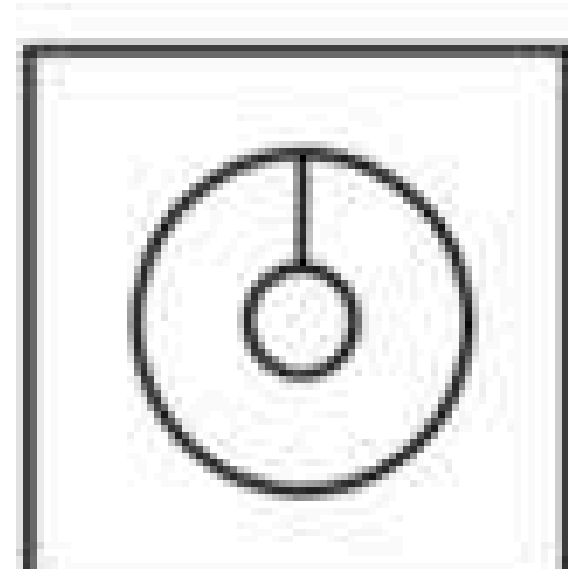
小红书: @贝栗子

加密2

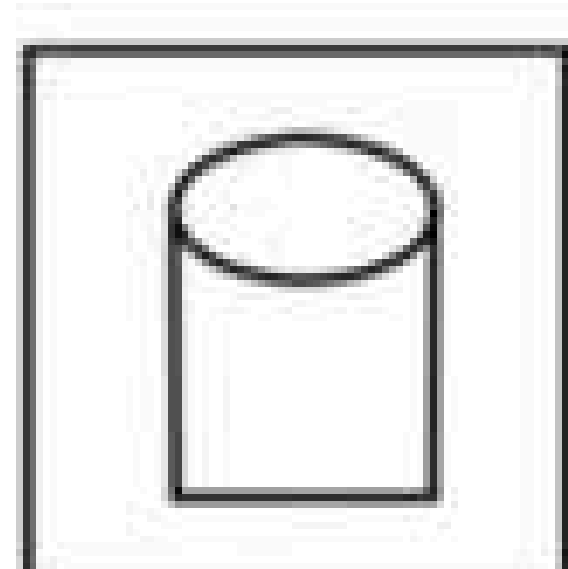
➤ 难度升级: 生活化考查笔画, 且2/3笔画



①



②



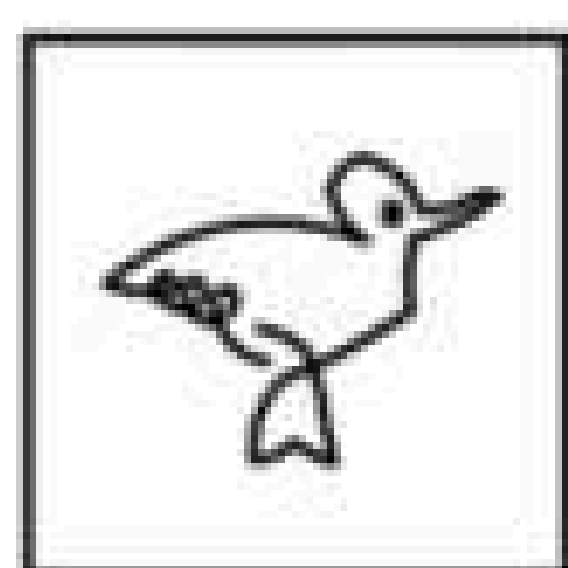
③



④



⑤

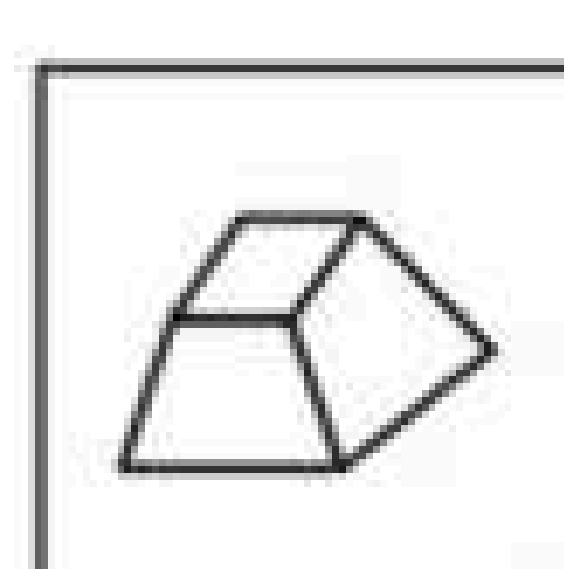


⑥

24联考-生活化-1/2笔画-146



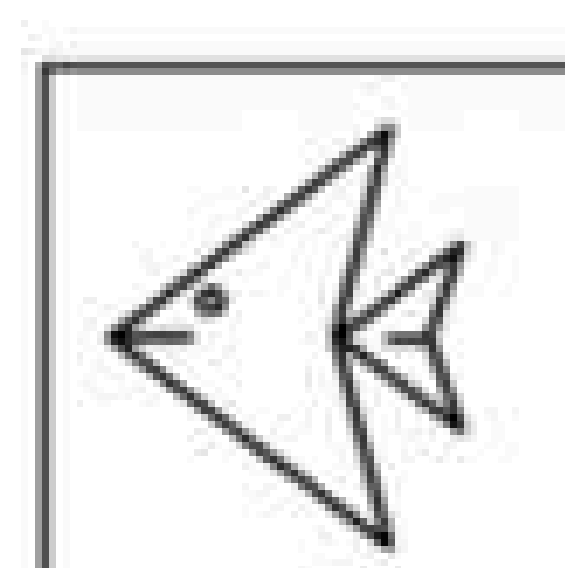
①



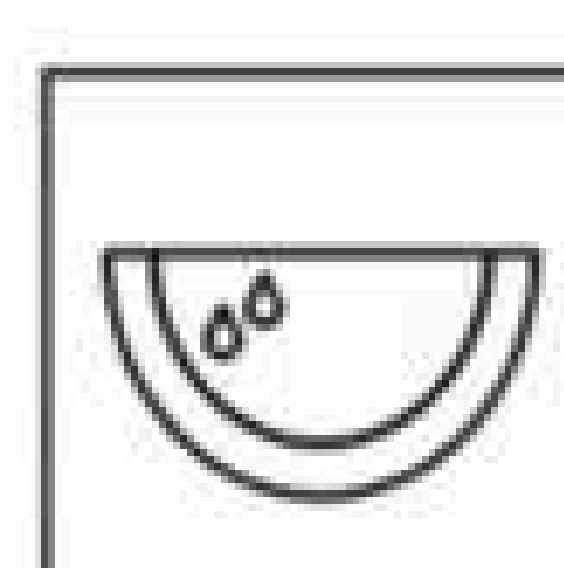
②



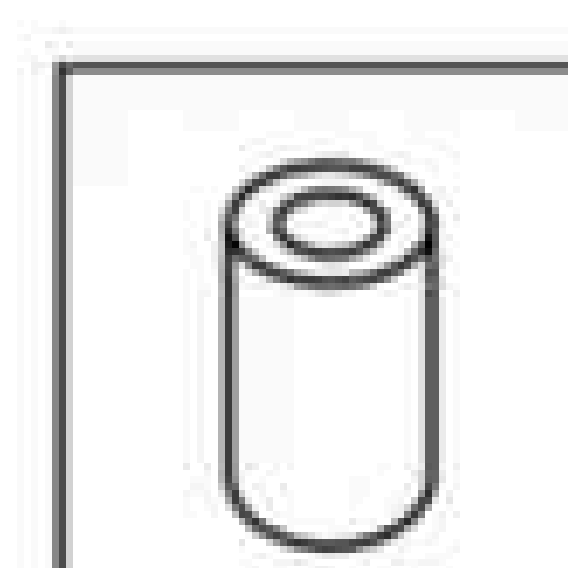
③



④



⑤



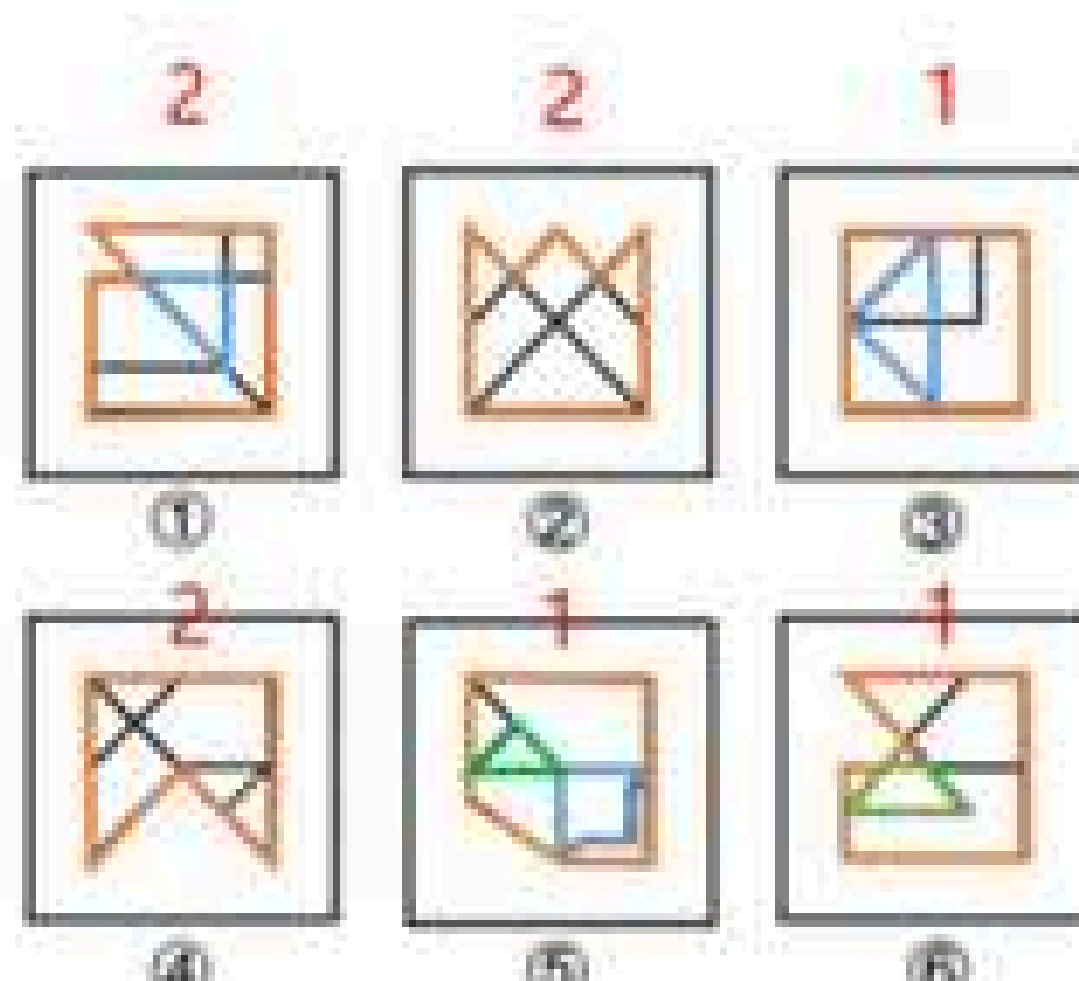
⑥

25联考-生活化-2/3笔画-126

➤ 笔画-小结

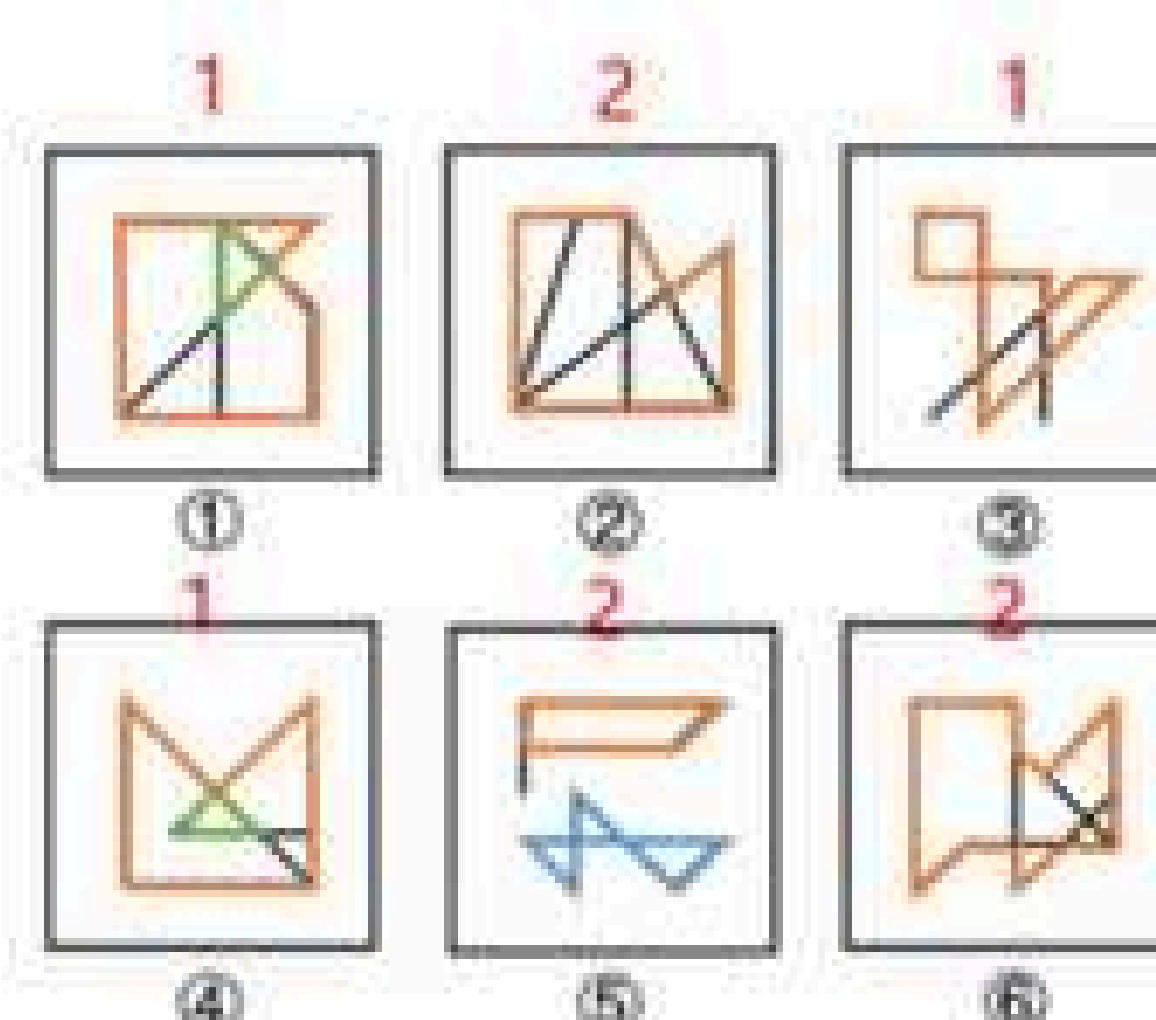
笔画 — 特征 { 老版本 — 五角星、日、田、圆相交
新版本 — 面、多端点、生活化

笔画



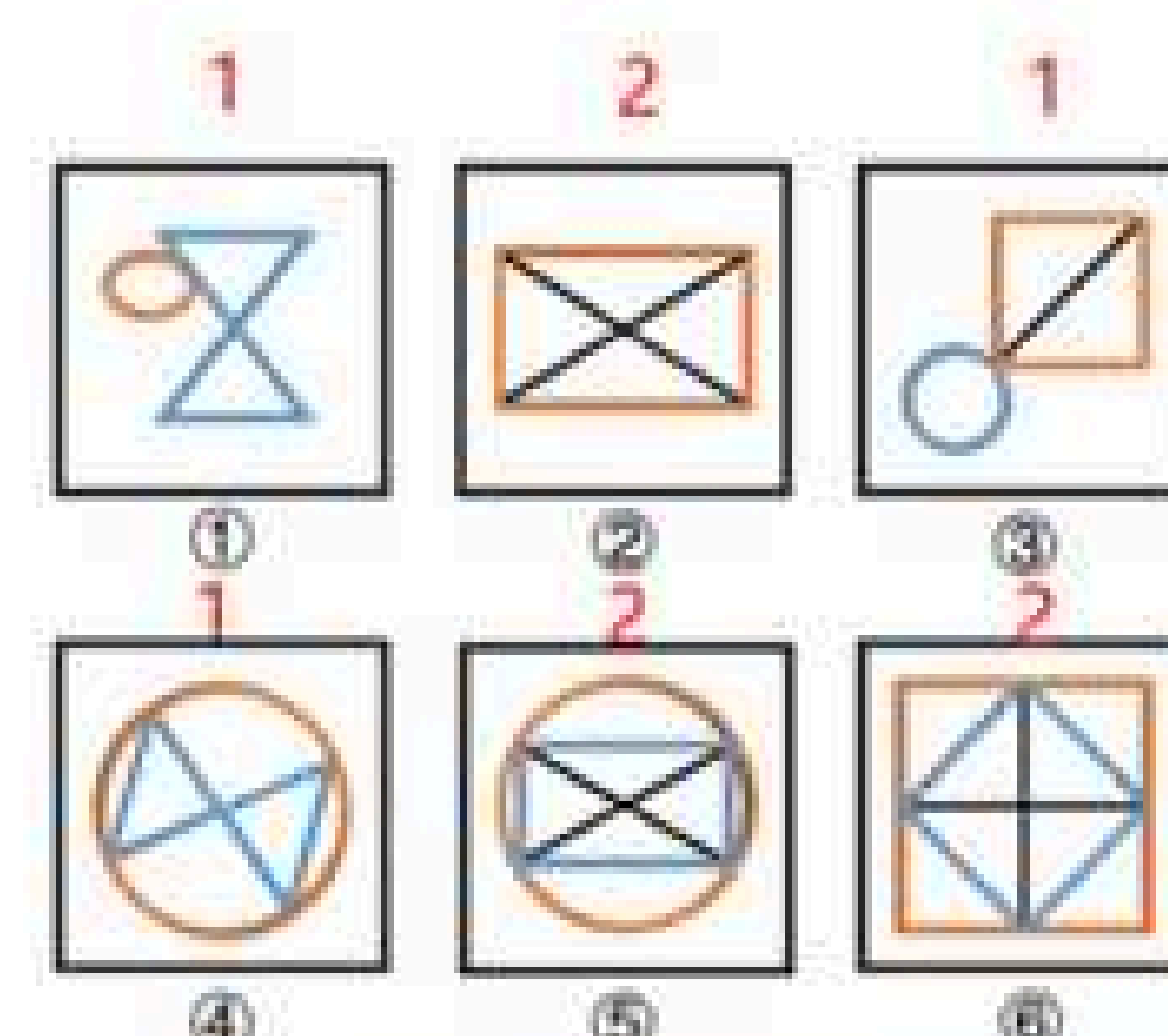
➤ 特征: 面特征

笔画



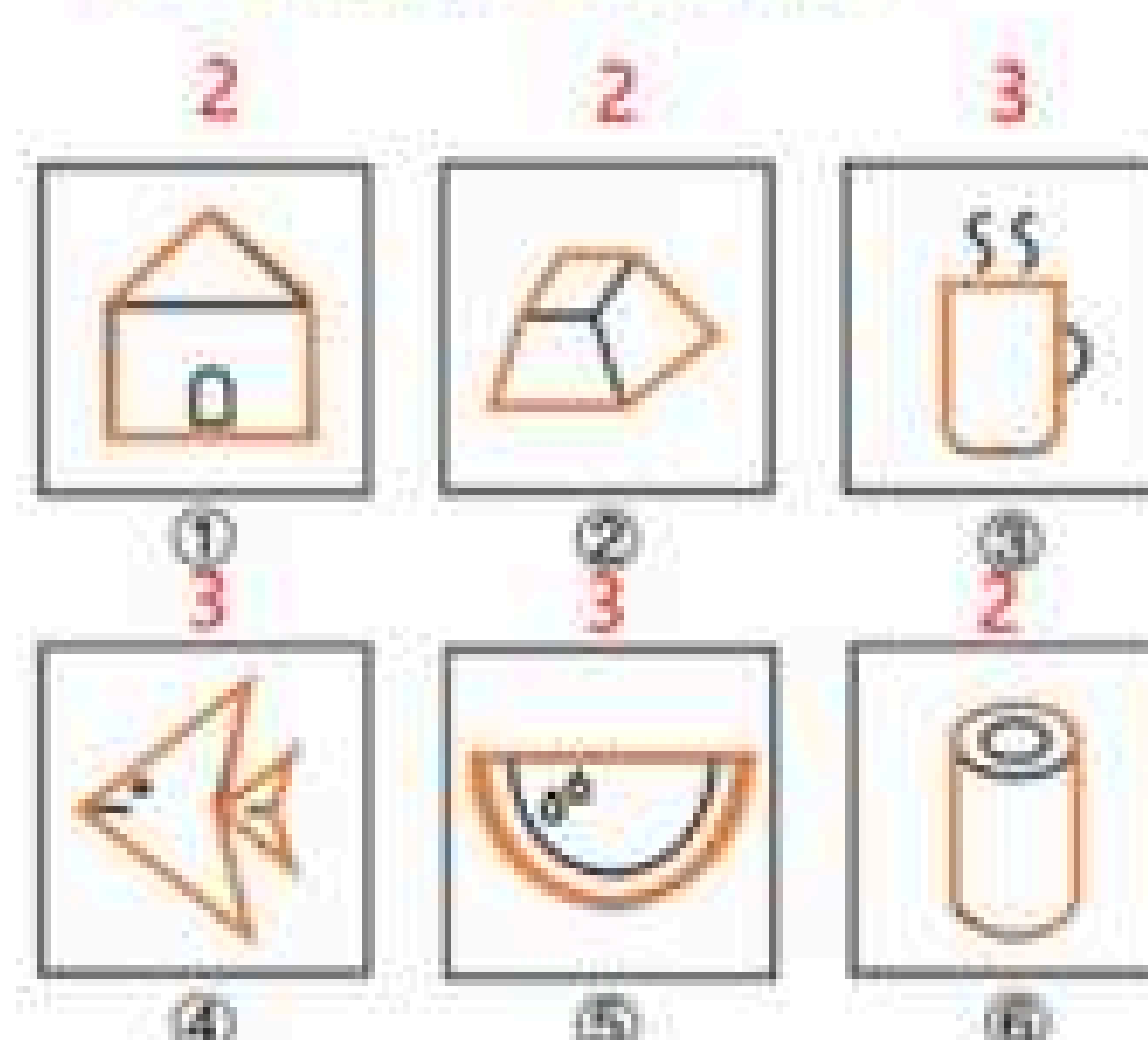
➤ 特征: 多端点

笔画



➤ 特征: 田字形

笔画



➤ 特征: 生活化

➤ 笔画拔高: 2笔画/3笔画

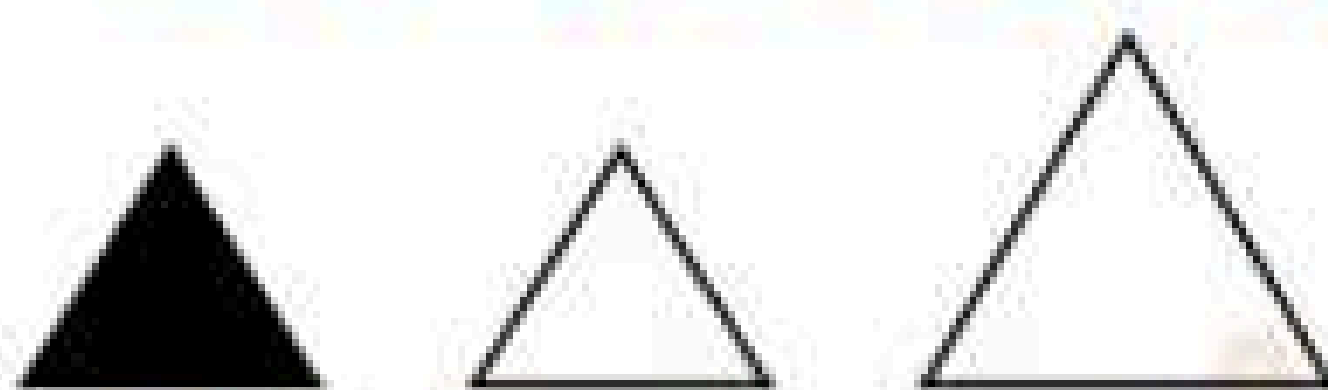
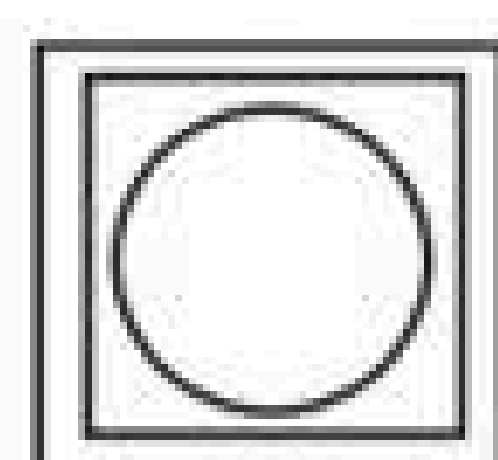
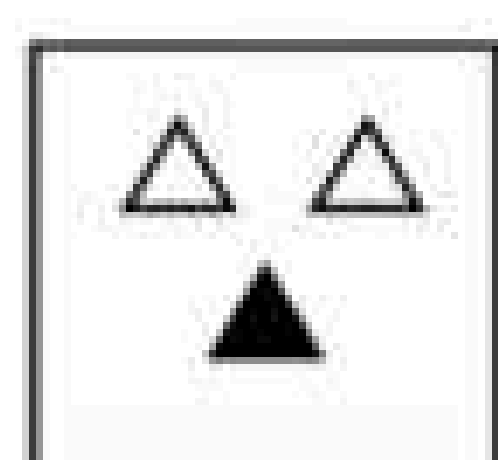
5. 元素

含义

作图特点

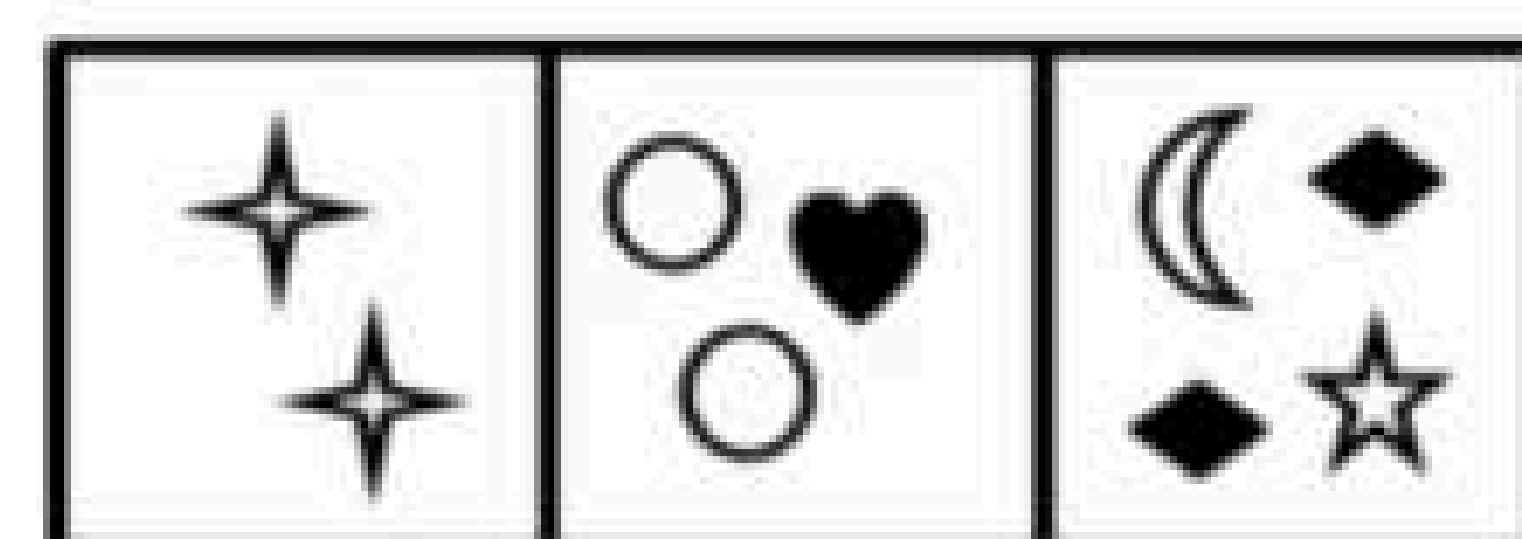
独立的小的图案

提示：怎么数种类？



颜色不同,算两种;大小不同,算一种

出题者作图：独立的小图形



基础考点

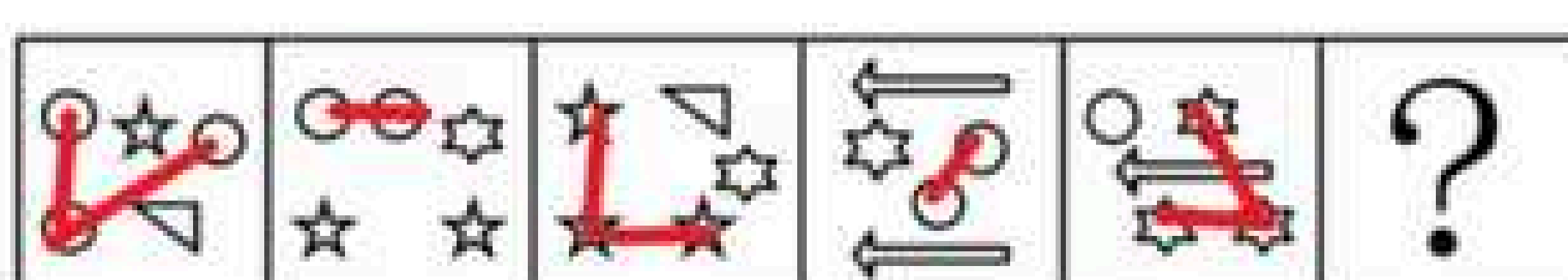
特征--独立的小的图案(数量、种类)

颜色不同,算两种
大小不同,算一种

特征--生活化-部分数

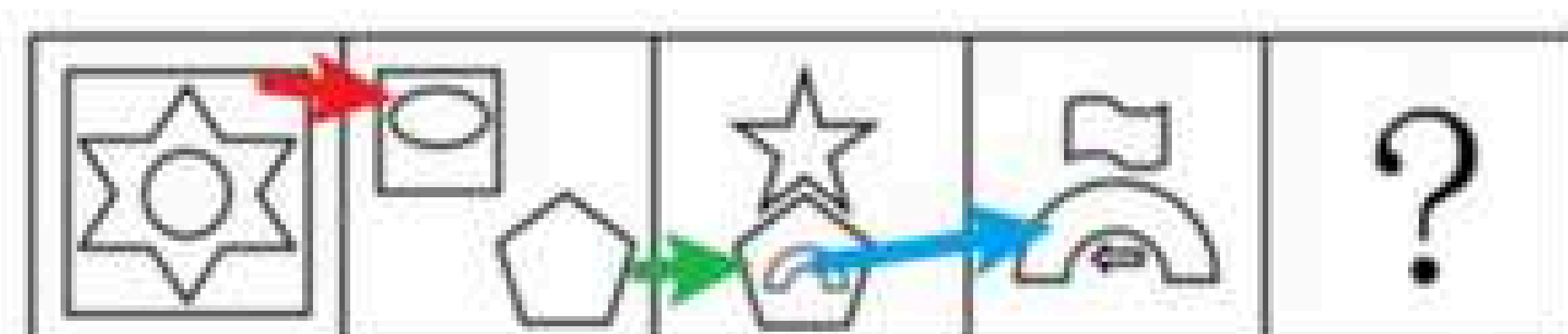
细化考点

①每幅图形内部“找相同”(自身)



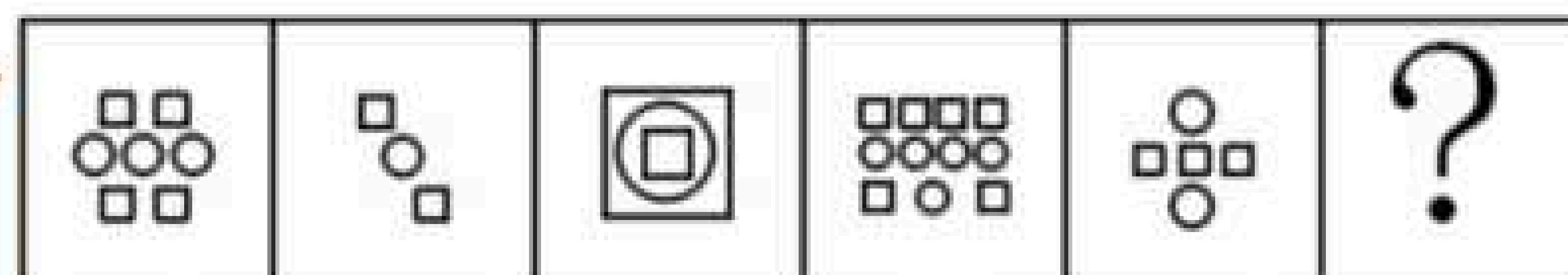
找相同

②相邻两幅图形“找相同”(邻居)

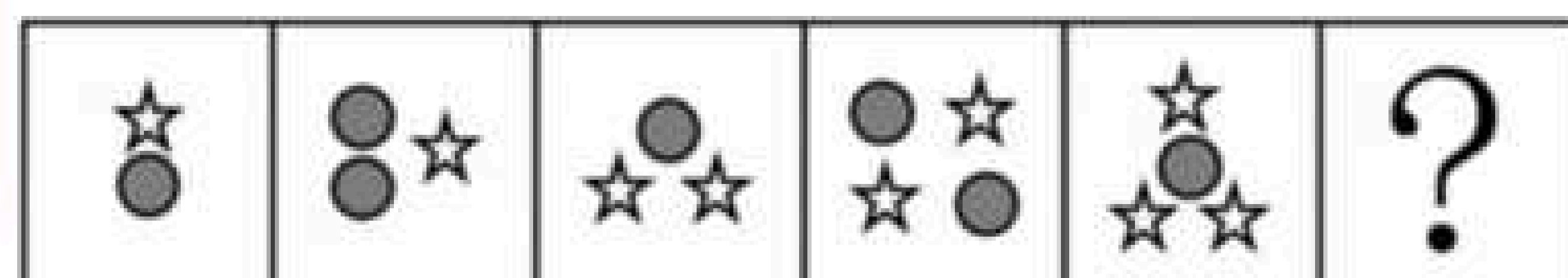


无相同----属性

①运算：相减、倍数、相加



②换算：把一个元素，转换成另外一个



> 换算公式(背)：图1+图3=2倍图2

部分数

什么是“部分数”？连在一起就是一部分

为什么数“部分数”？生活化图形



> 提示：部分数数“黑色”，面数“白色”

数量规律--元素小结

5.元素

生活化-小结



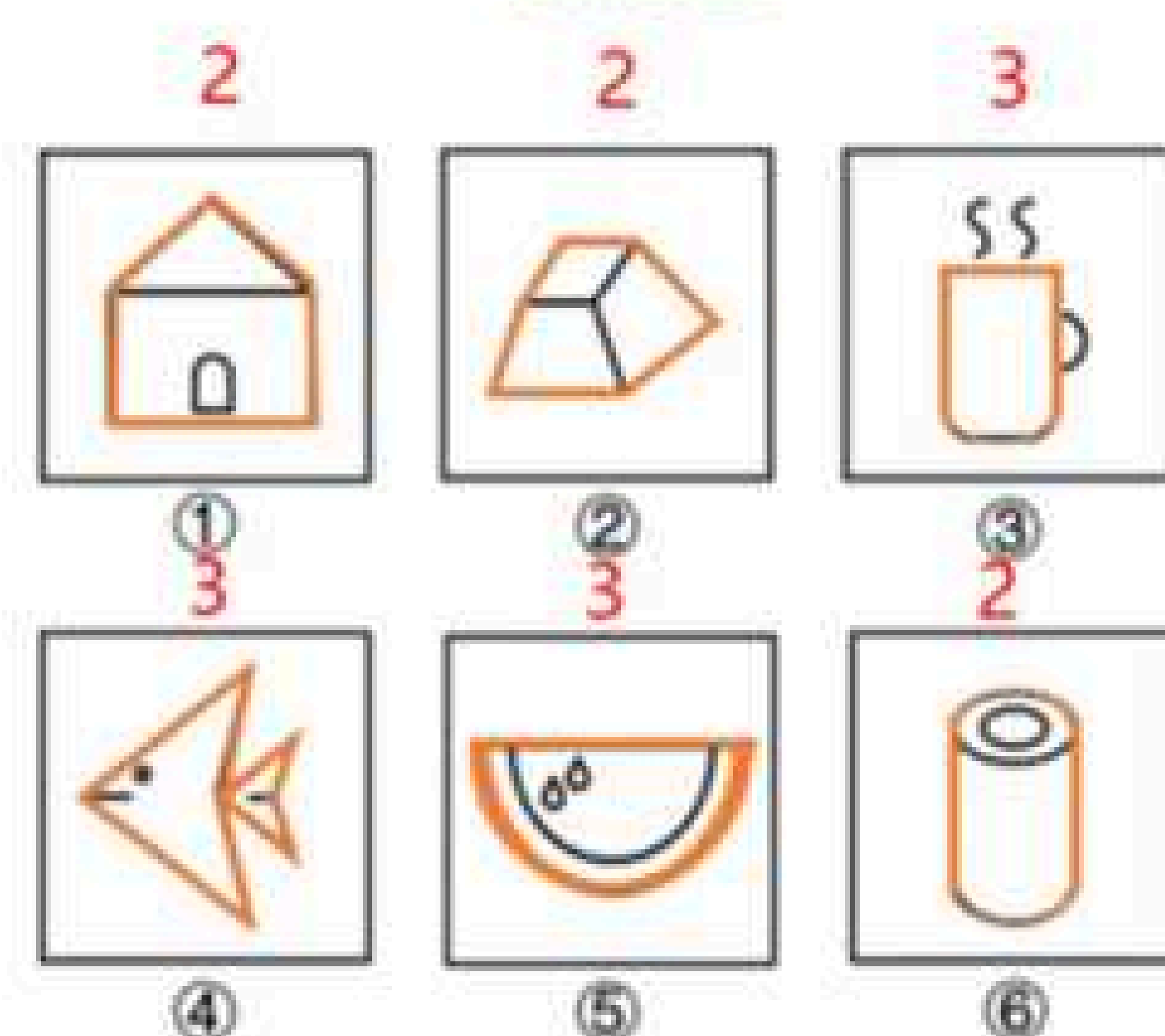
小红书: @贝栗子



面数量



开闭性

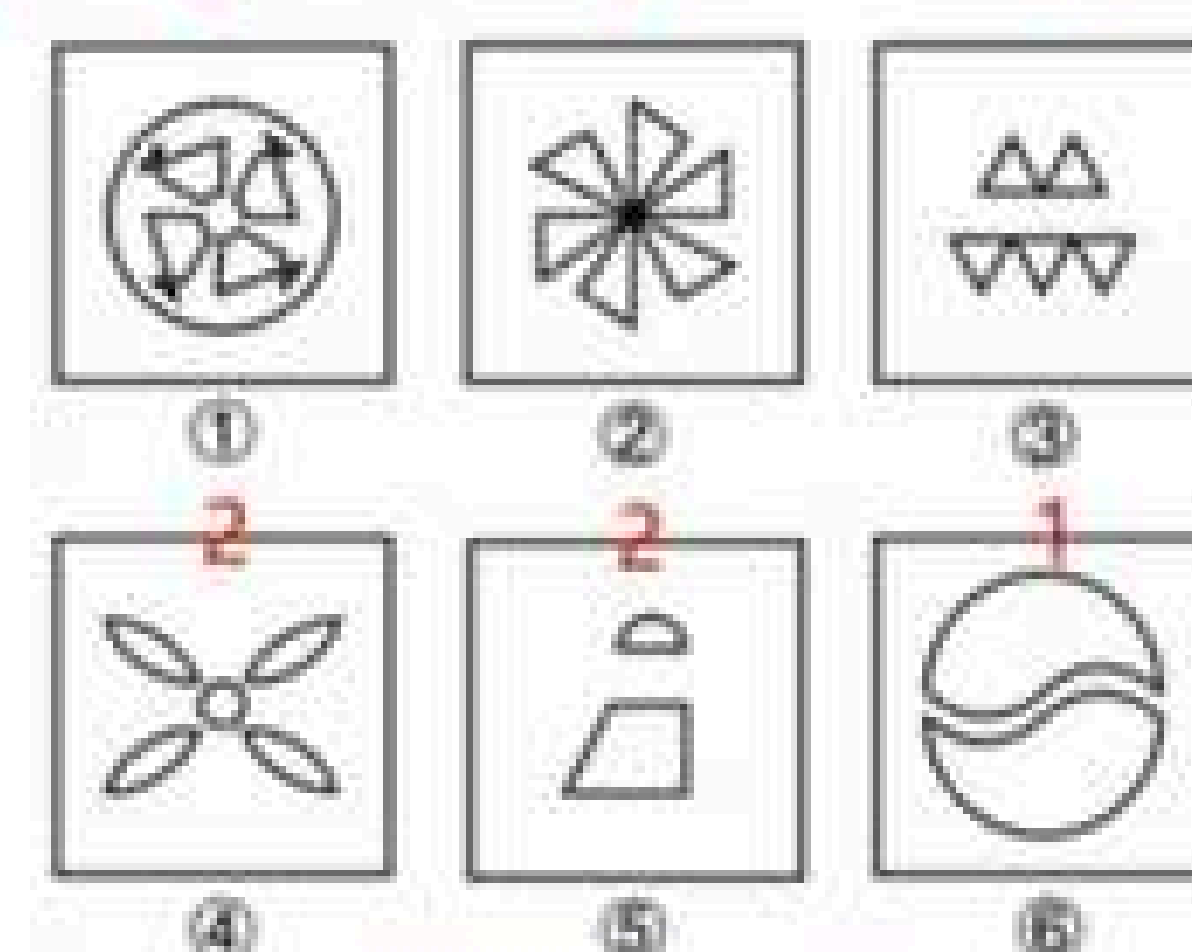


元素-小结



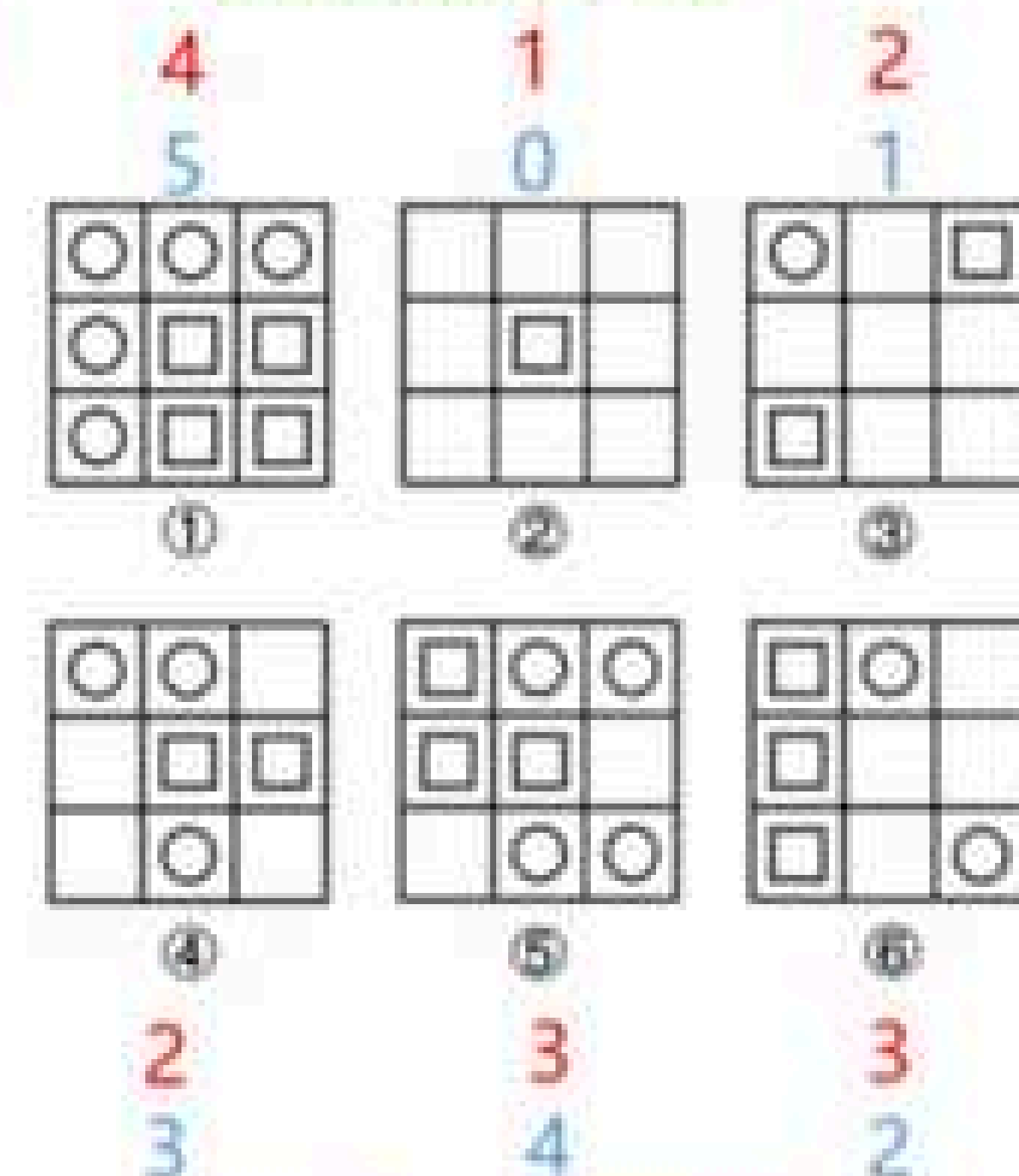
生活化 → 部分数

元素种类

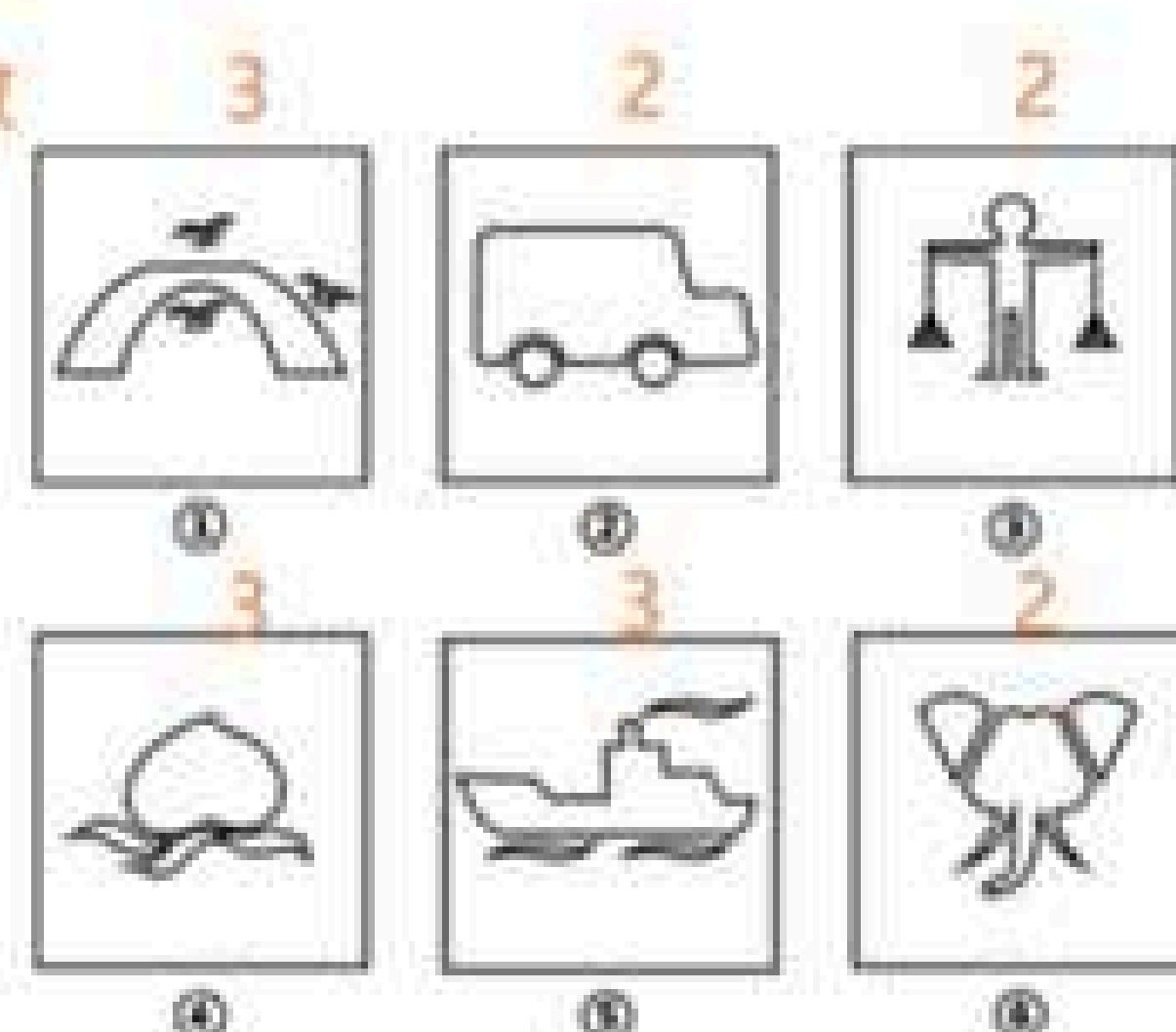


元素的种类

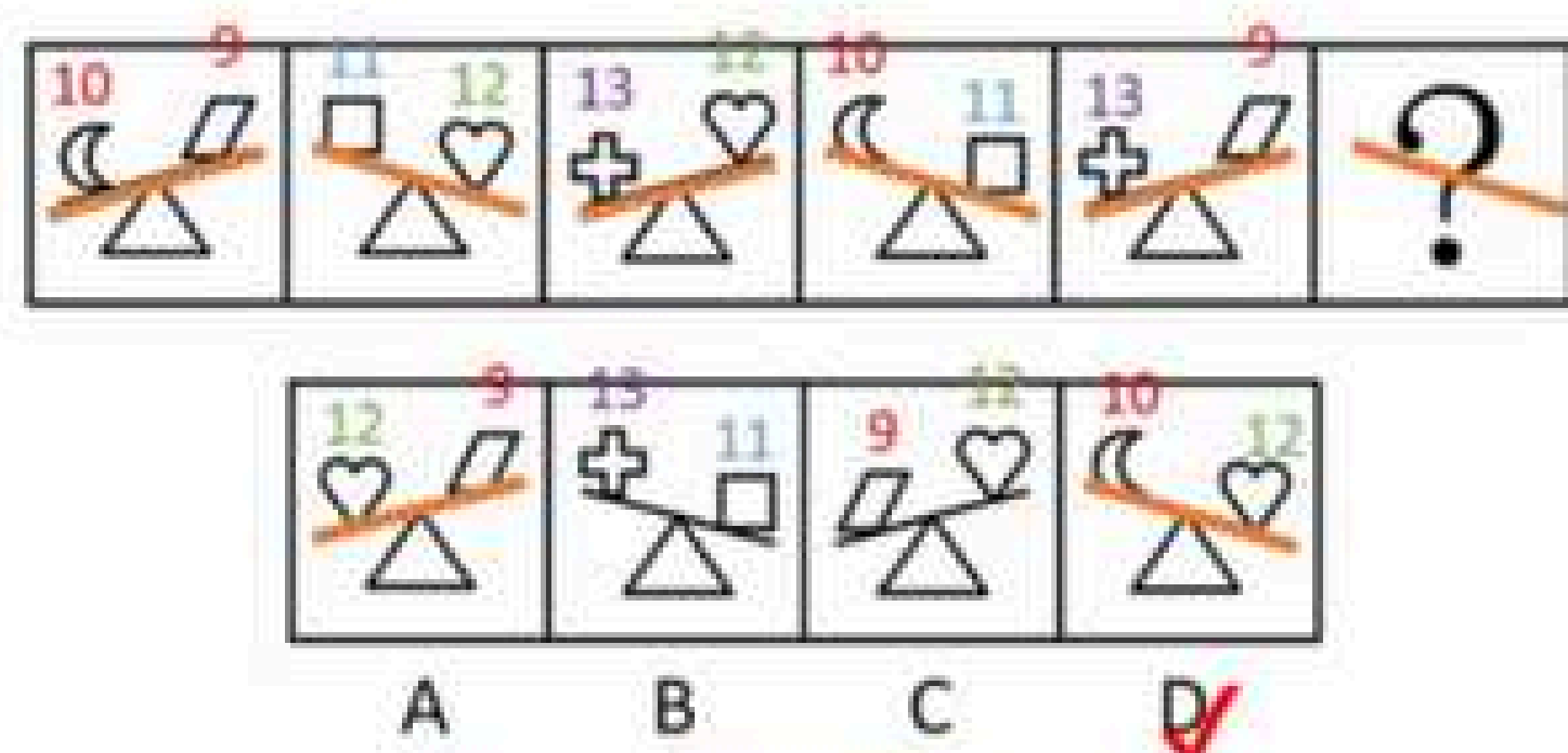
正方形
圆形



相同元素个数

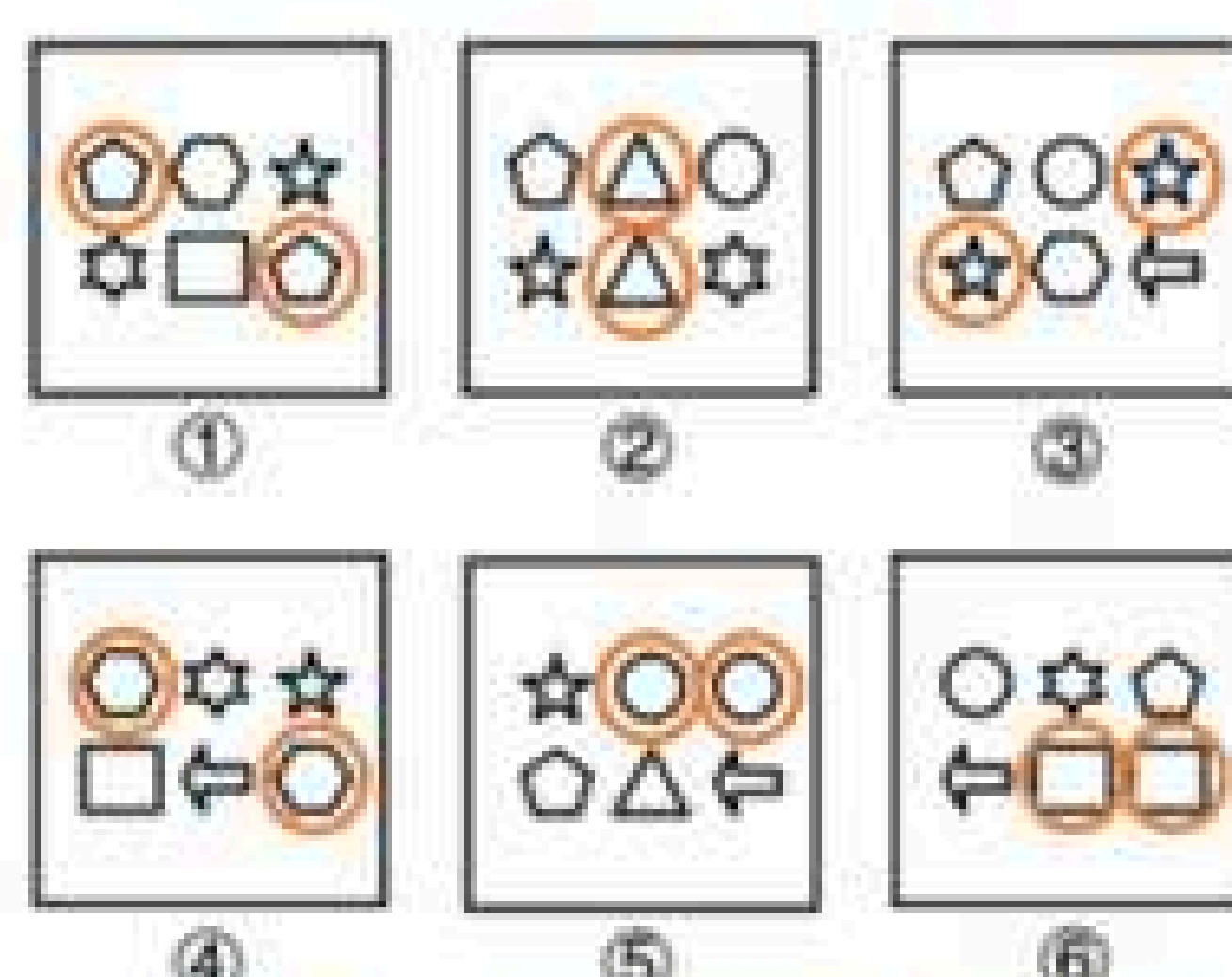


> 2种 → 找相同 → 个数

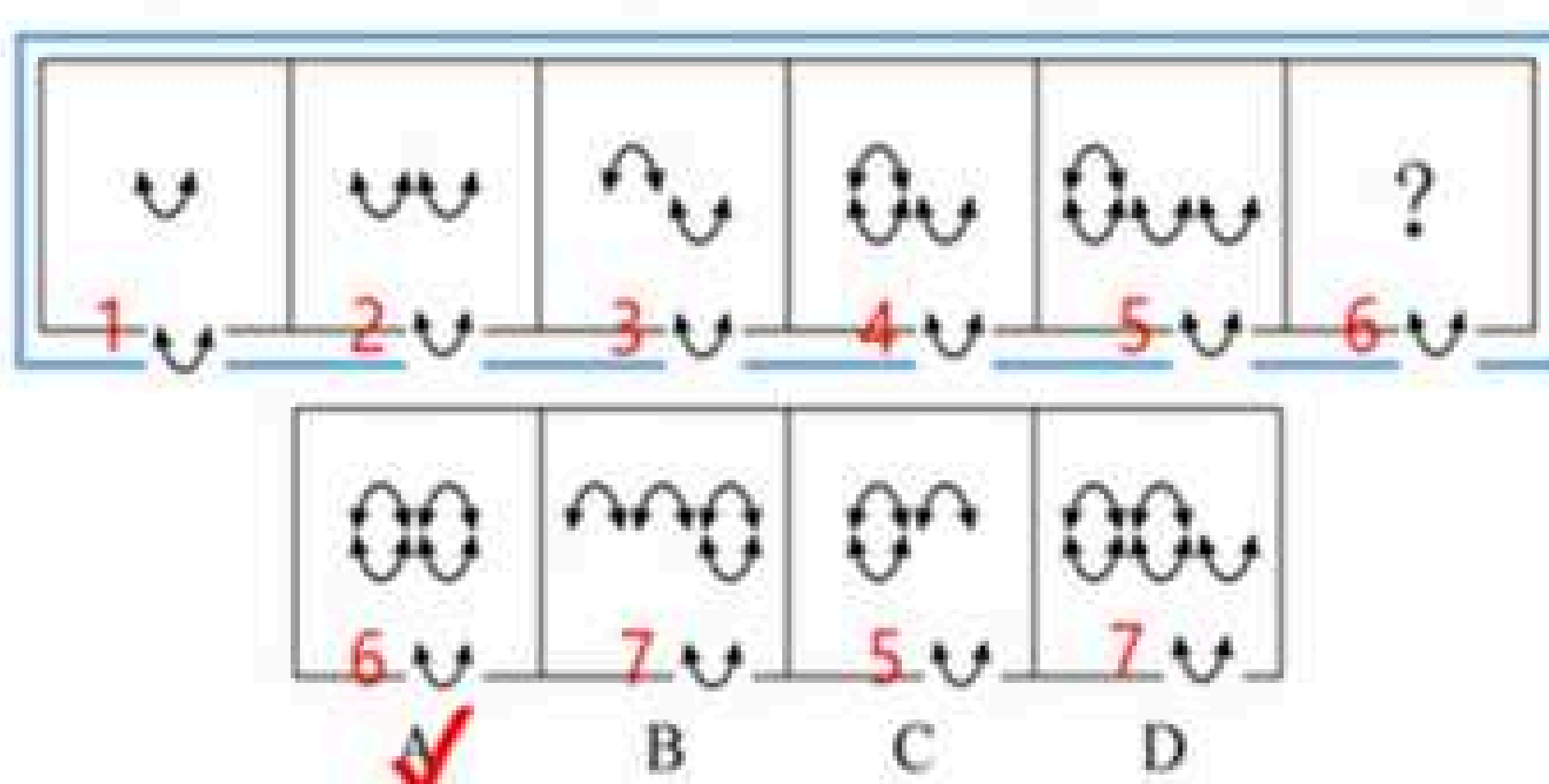


> 2种 → 找相同 → 比重

相同元素的位置关系



> 2种 → 找相同 → 位置

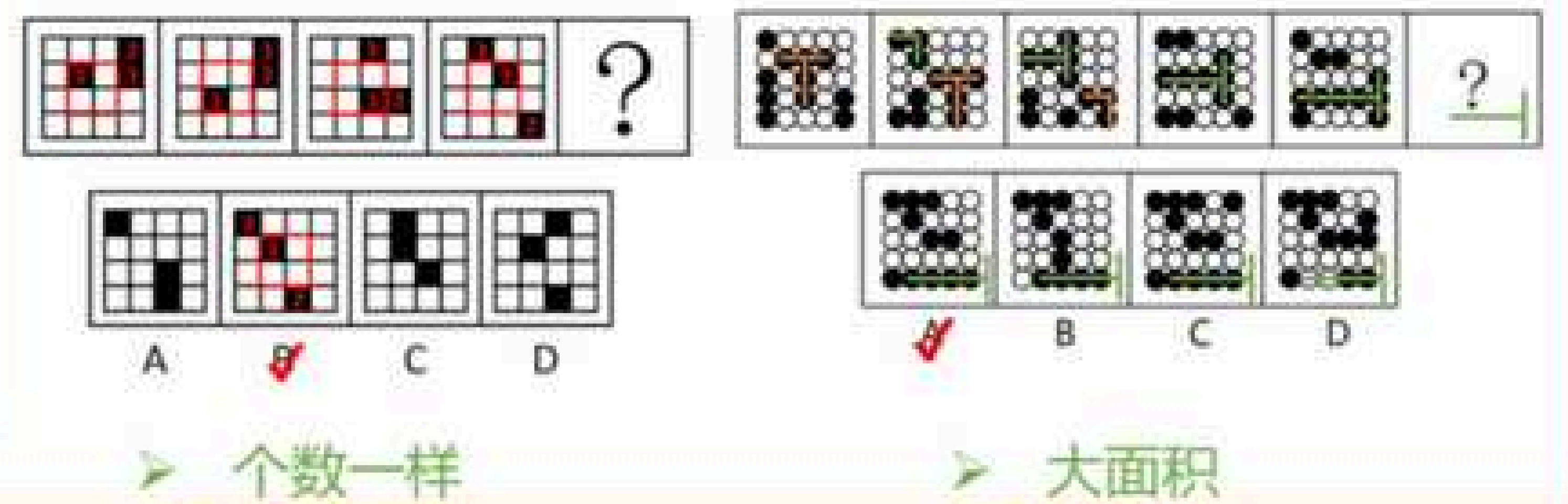


2种 → 换算

元素-黑白块 — 分堆且堆数少 — 部分数 $\left\{ \begin{array}{l} =2堆 — 每堆个数的变化 \\ >2堆 — 黑色、白色、运算 \end{array} \right\}$ 黑块个数

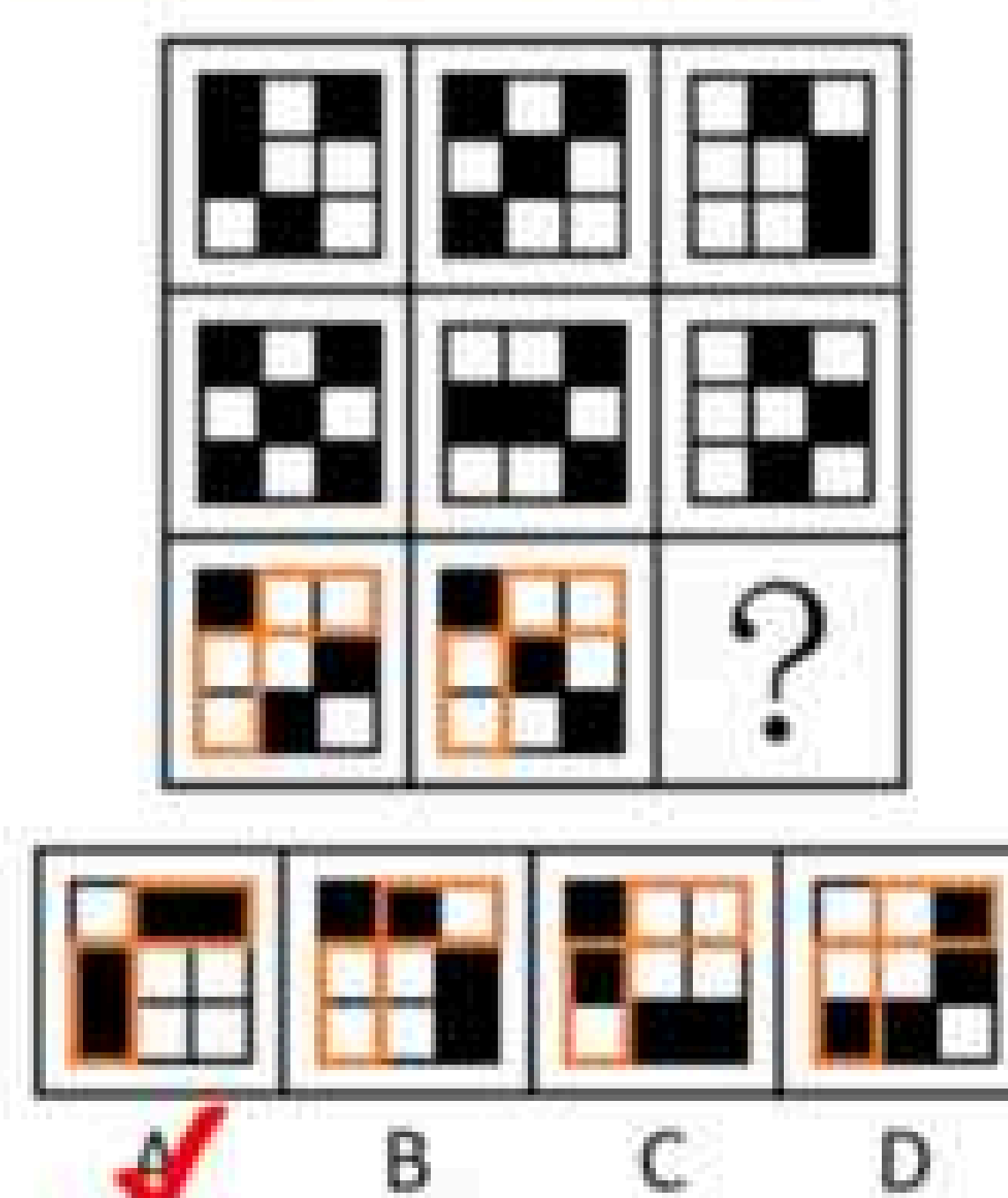
完全一样 — [1] 位置 $\left\{ \begin{array}{l} 平移 \\ 旋转/翻转 \end{array} \right\}$ 相邻比较 $\rightarrow$ 黑块不动(像)
 部分一样 — [2] 样式(运算) $\left\{ \begin{array}{l} 黑白运算 \\ 加减同异 \end{array} \right\}$ $\rightarrow$ 个数不一样
 [3] 标记 $\rightarrow$ 不出分组分类

区分: 位置规律

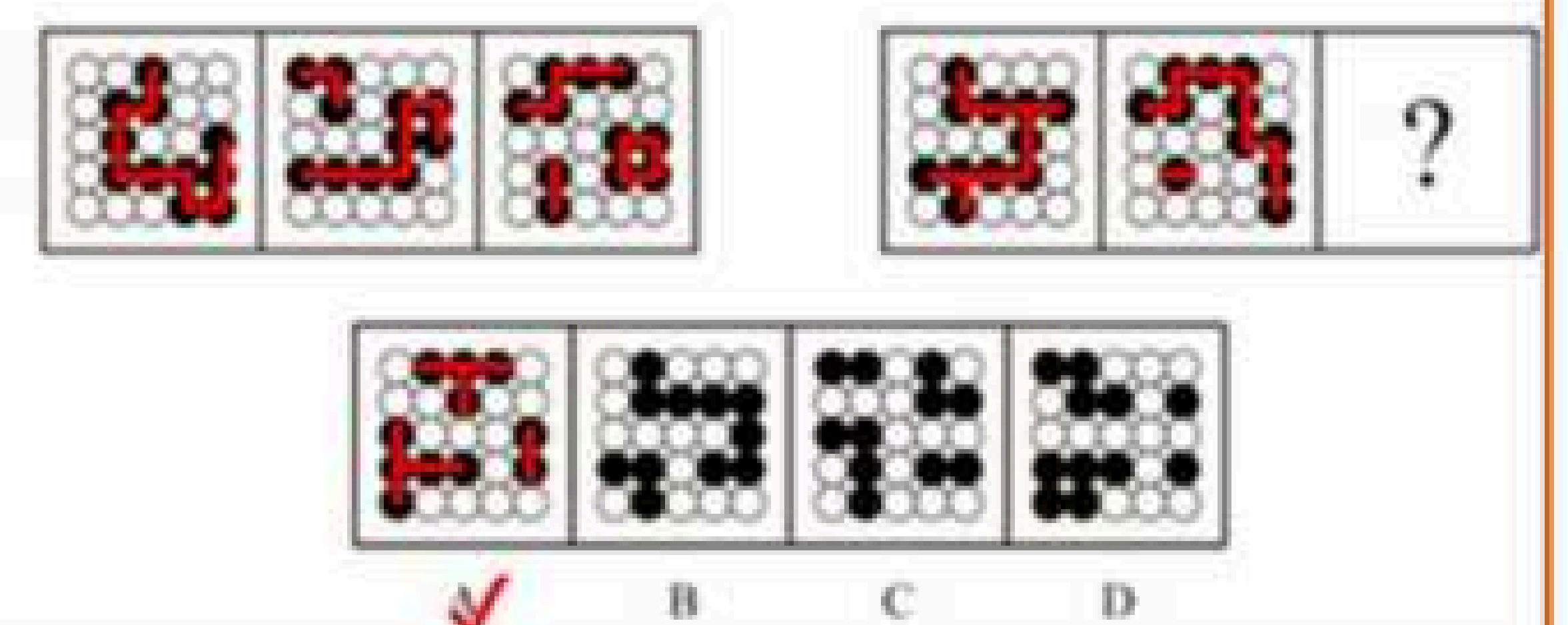


[1] 属性 $\left\{ \begin{array}{l} 对称性 \rightarrow 规则(优先级最高) \\ 曲直性 \\ 开闭性 \rightarrow 黑块被分割, 背景有网格 \\ 面 \rightarrow 所有、大小、相同 — 框内面 \\ 笔画 \\ 点 \rightarrow 曲直交点、切点、框点 \end{array} \right\}$
 [2] 数量 $\left\{ \begin{array}{l} 线 \rightarrow \left\{ \begin{array}{l} 曲直、横竖、框 \\ 平行线、贪吃蛇 \end{array} \right\} \\ 元素 \rightarrow 分堆, 且堆数少 \\ 直角 \end{array} \right\}$
 [3] 图形间位置 $\rightarrow$ 简单、复杂、1黑+多白

黑白运算

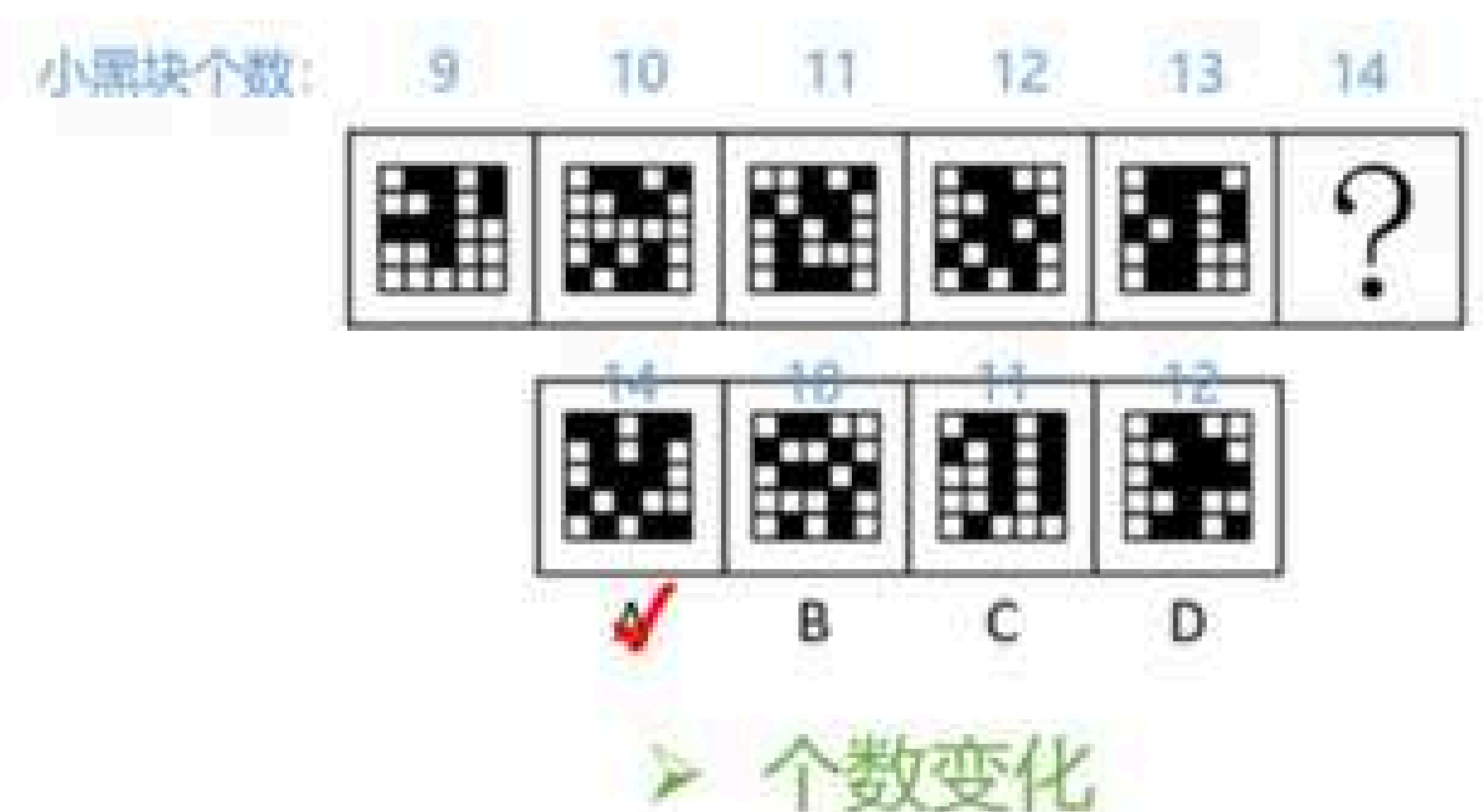
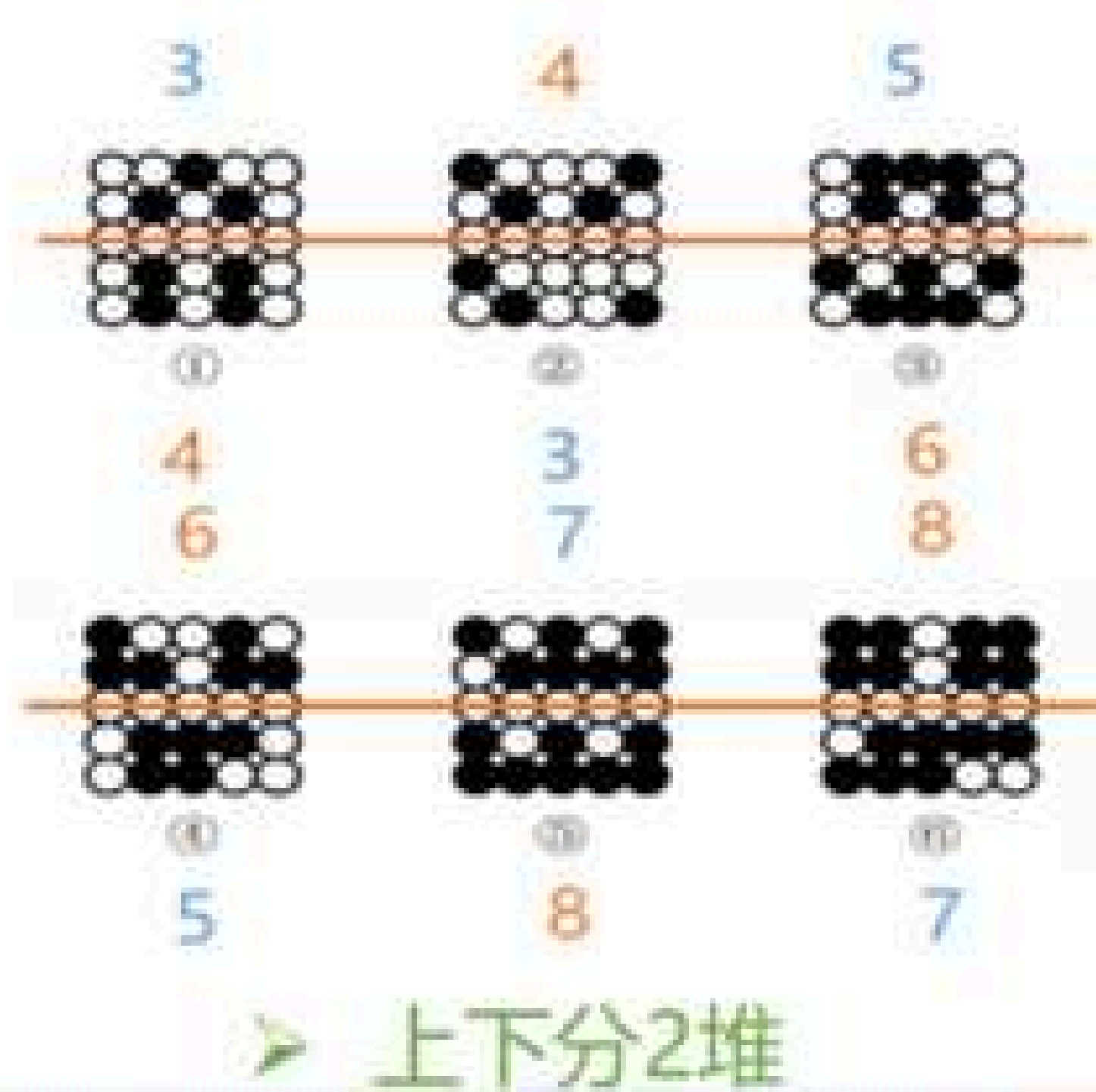
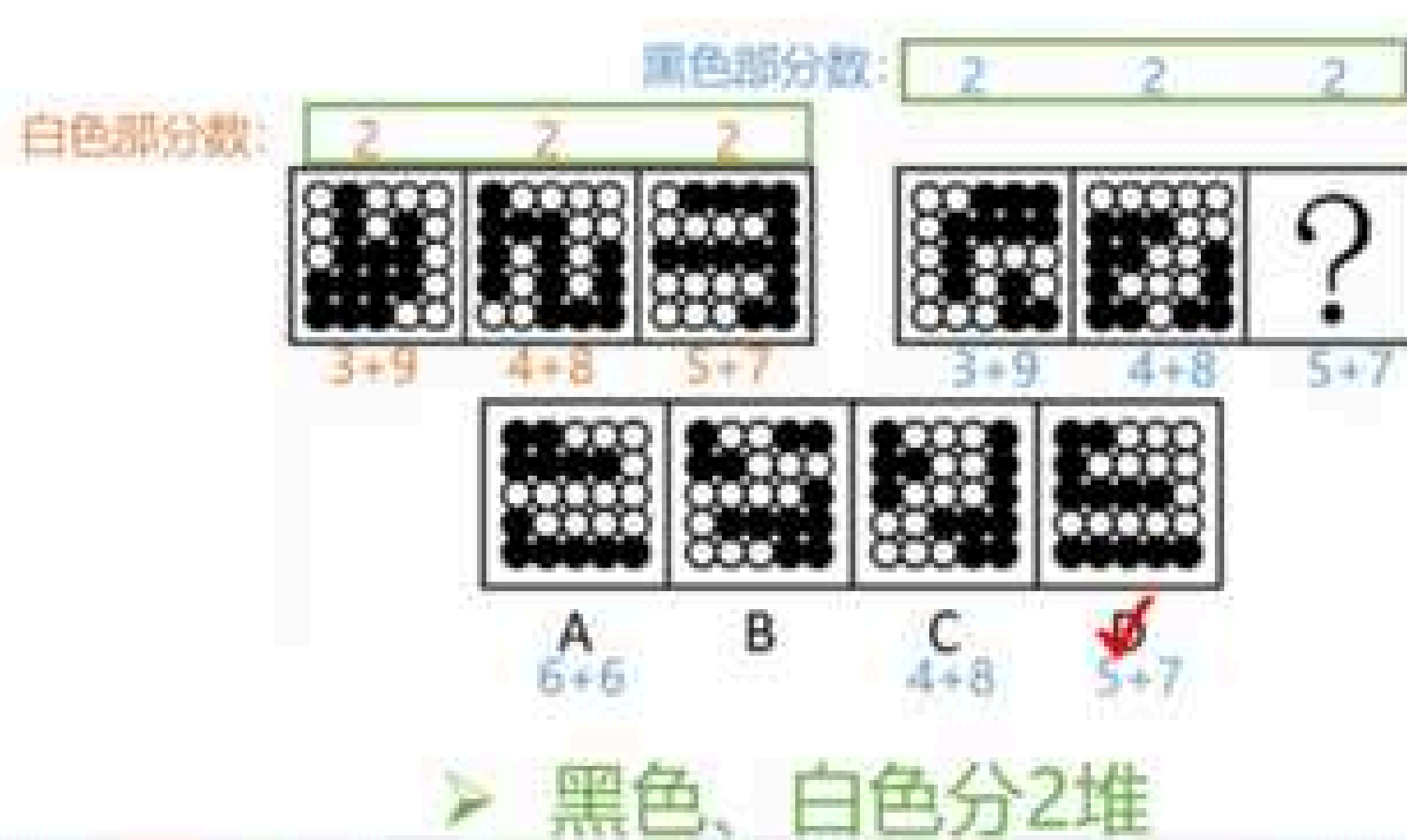
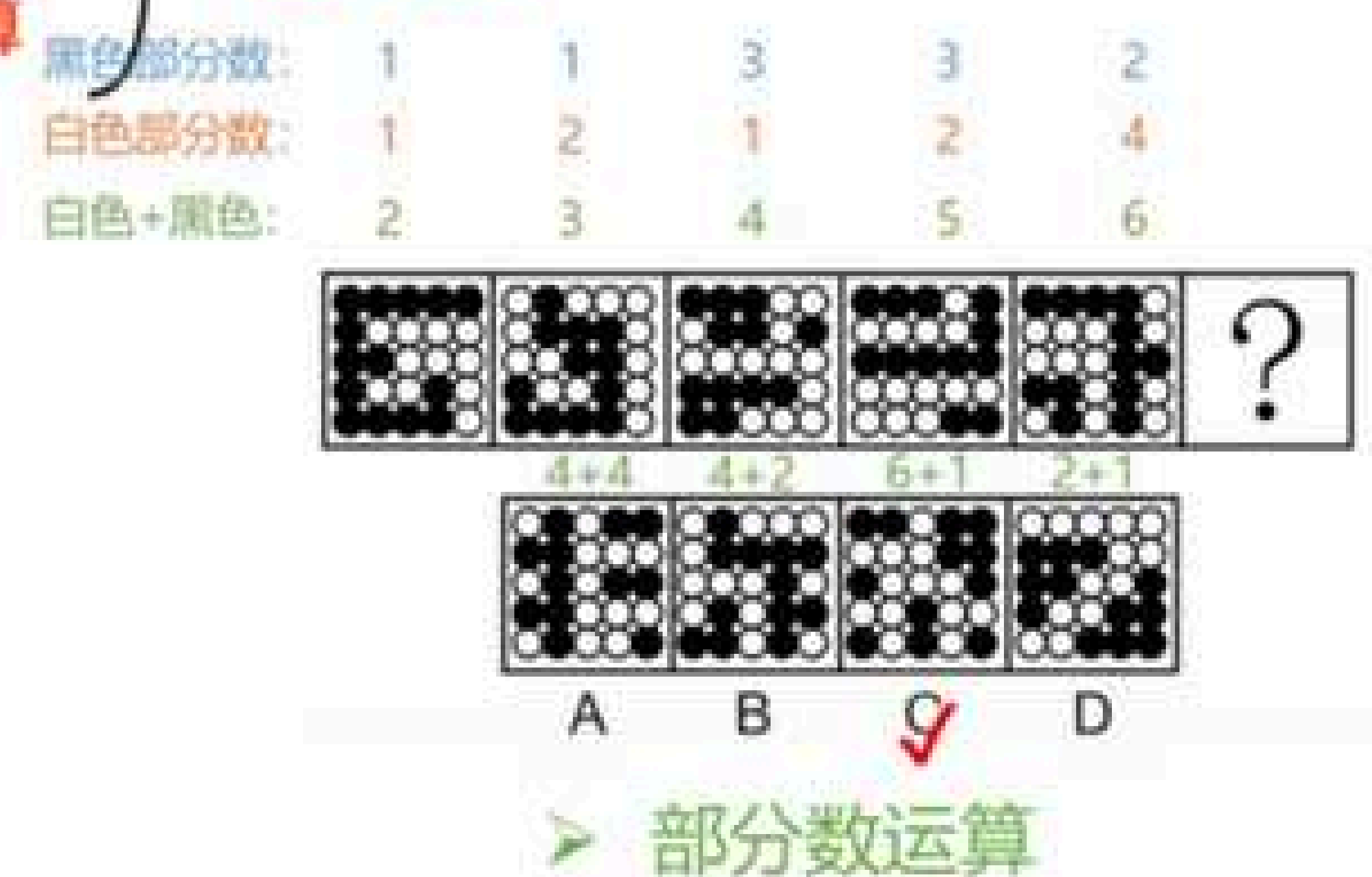
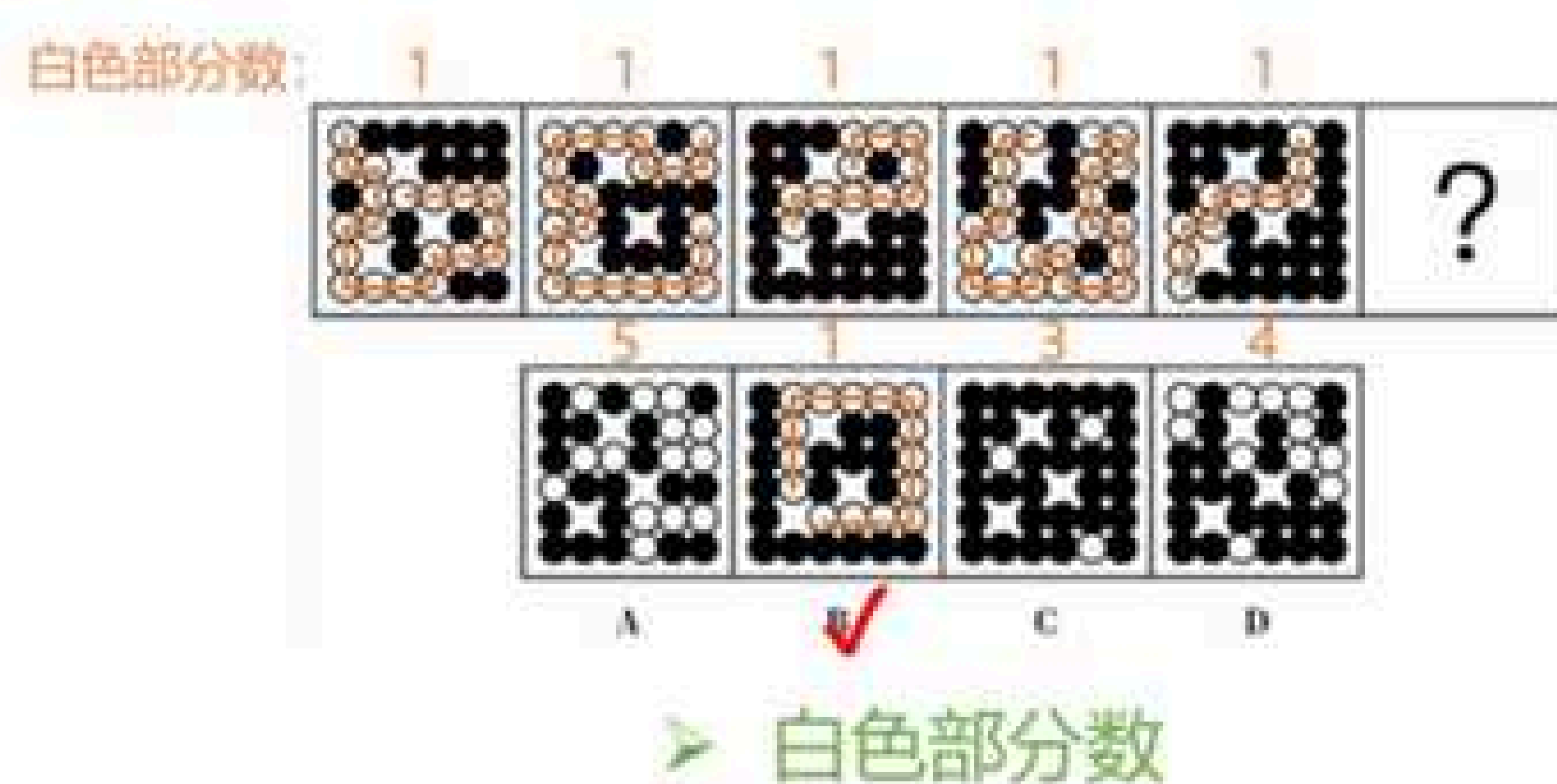
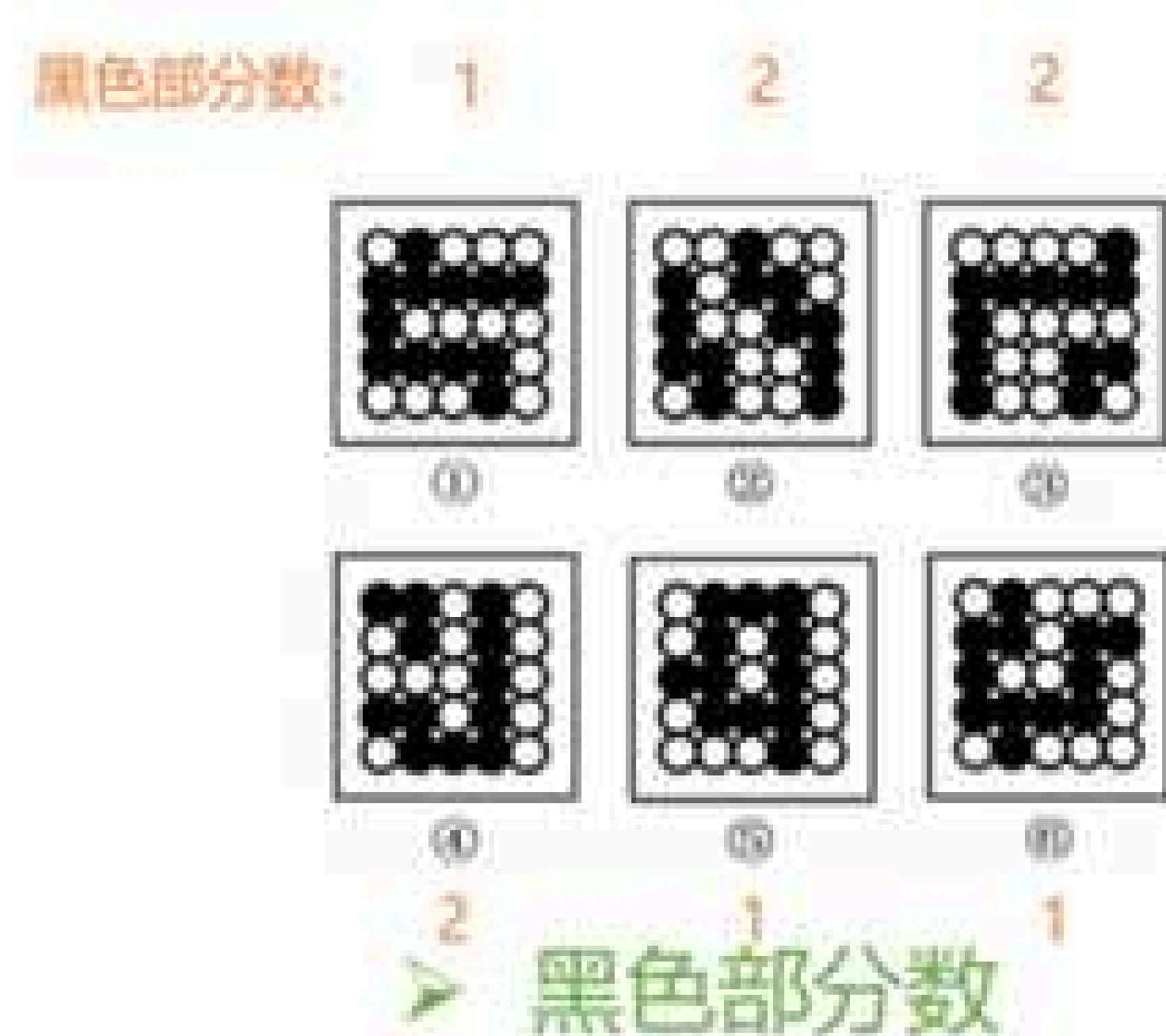


部分数

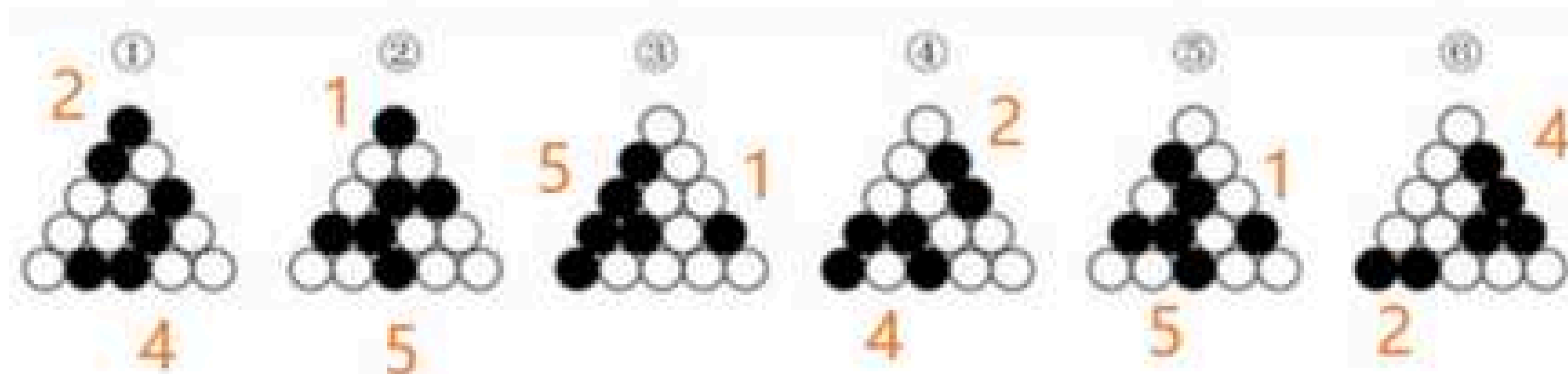


部分数-黑白块-小结

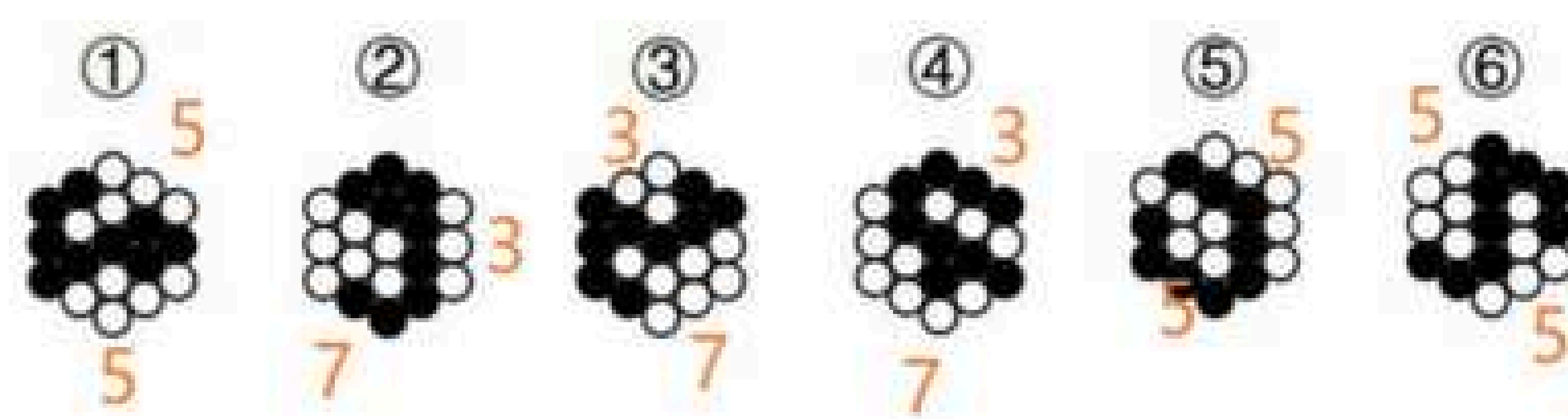
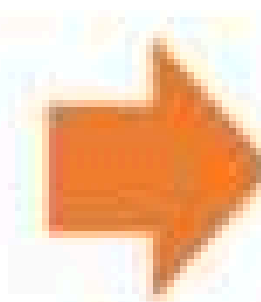
元素-黑白块 — 分堆且堆数少 — 部分数 $\left\{ \begin{array}{l} =2堆 — 每堆个数的变化 \\ >2堆 — 黑色、白色、运算 \end{array} \right\}$ 黑块个数



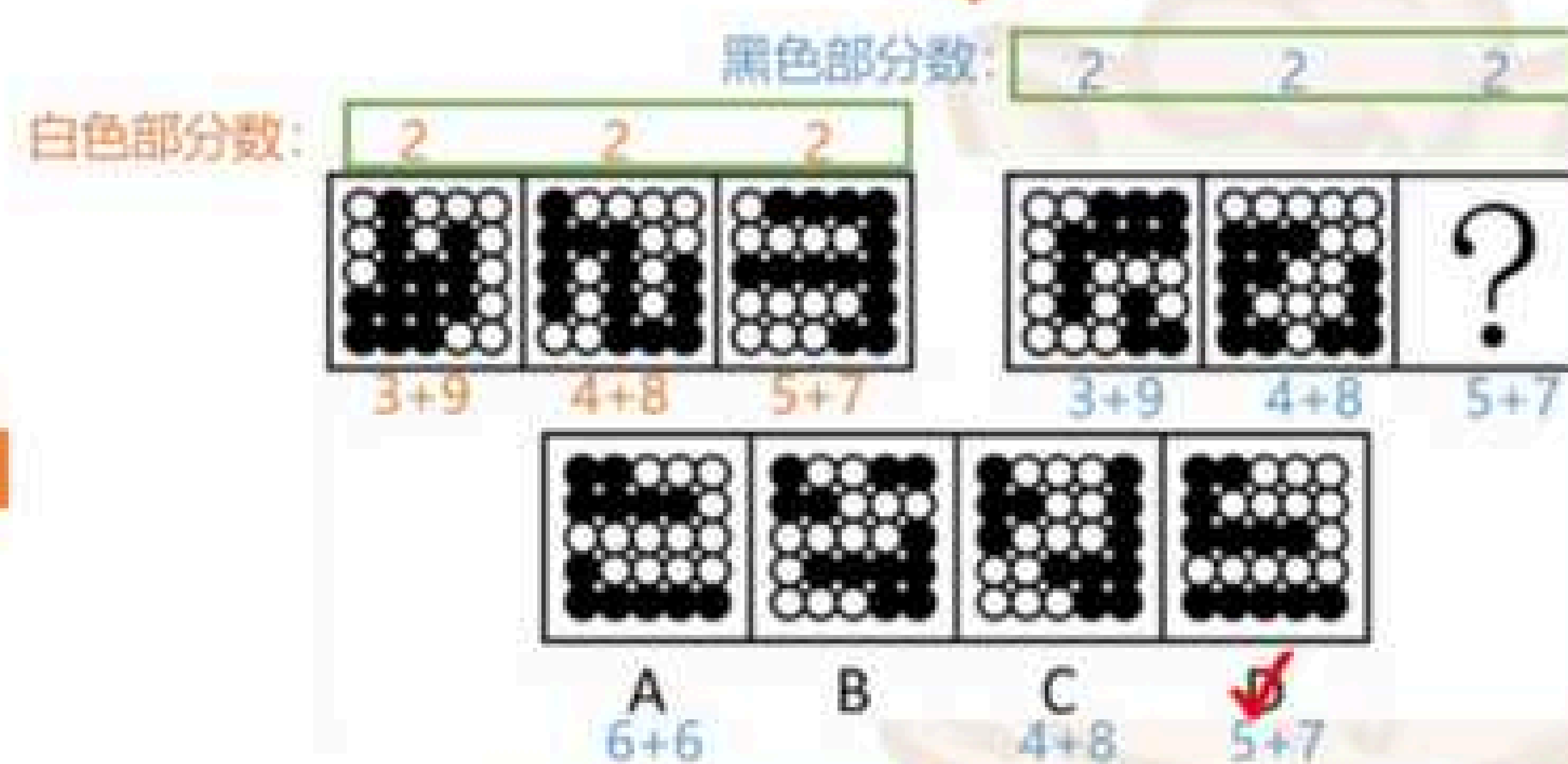
出题者“小心思”



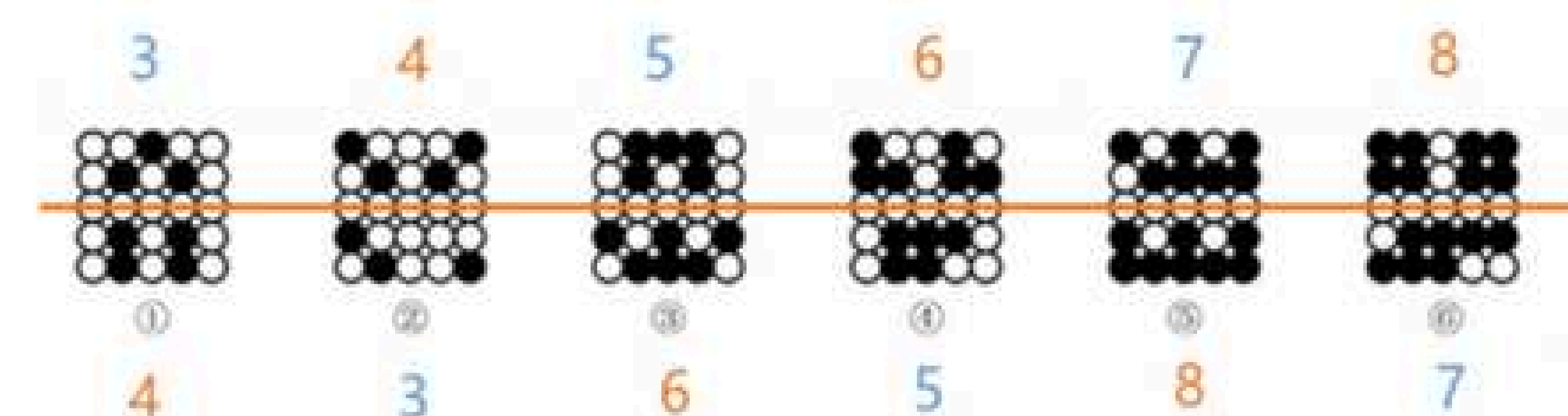
24国考【2堆黑色】



25四川【2堆白色】



25湖北选调【2堆白色+2堆黑色】



25山东事业【上下2堆】

数量规律--部分数小结

【元素】①命题者作图特点: 独立

②怎么数种类? 颜色不同, 优先算两种; 大小不同, 优先算一种

③基础考法: 元素种类、数量

④细化考法:

=2个元素→运算, 换算 (换算公式: 图1+图3=2倍图2)

>2个元素→找相同 (自身或邻居)

【部分数】①部分数概念: 连在一起就是一部分

②命题者作图特点: 生活化

【部分数-黑白块】①命题者作图特点: 分堆且堆数较少

②怎么数部分数? 边与边相连算一部分, 角与角相连算两部分

③考点:

=2堆→每堆个数的变化

>2堆→黑色部分数、白色部分数、黑色与白色的运算

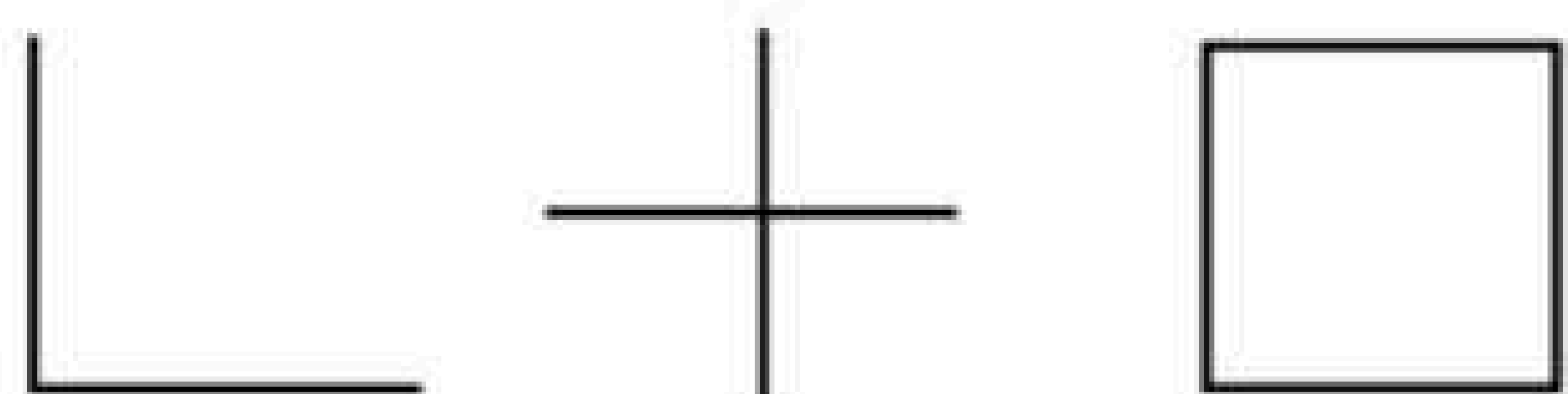
④部分数没有规律, 考虑黑球个数

6. 直角

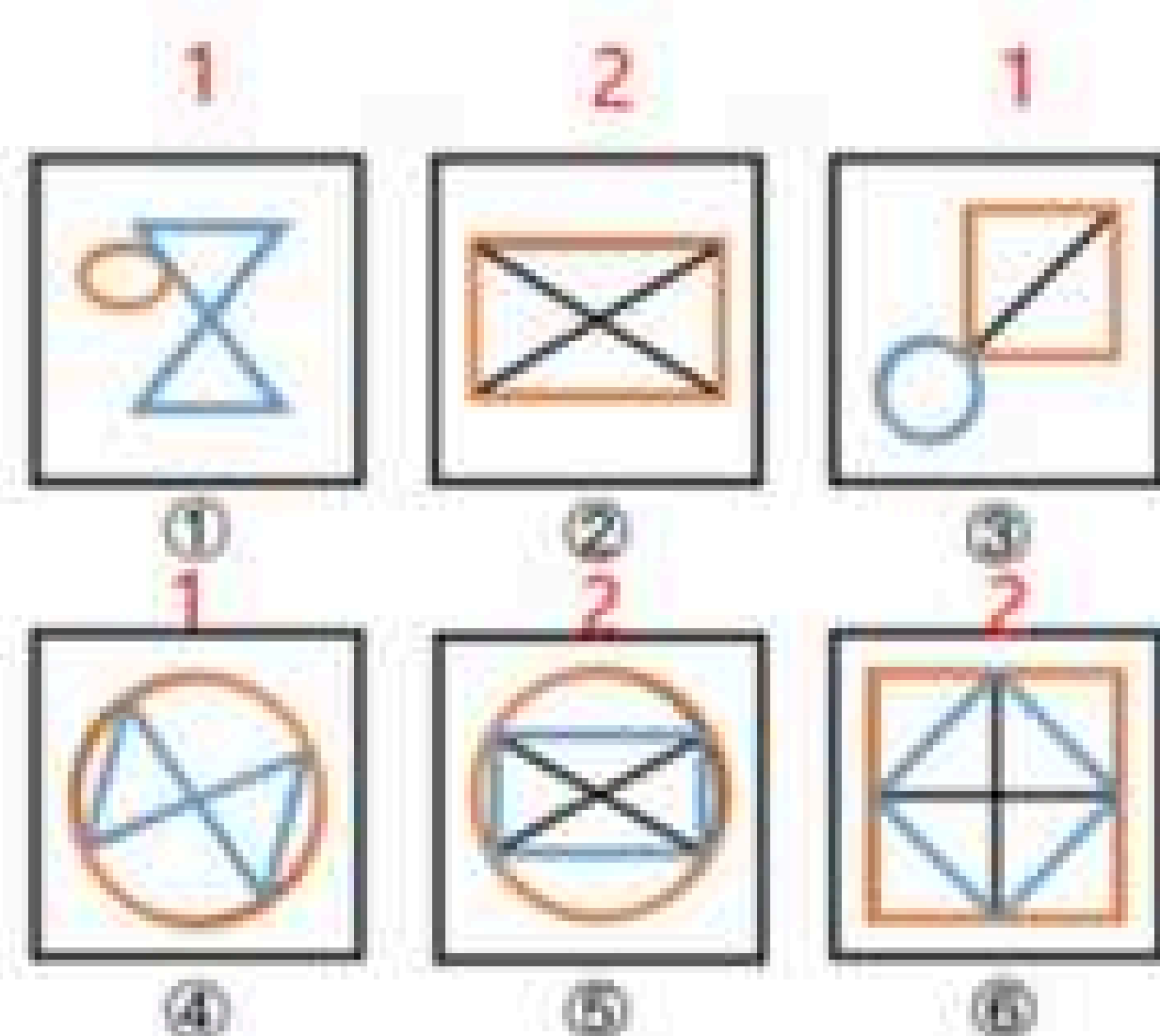
➤ “十字架”与“田”混淆

作图特点

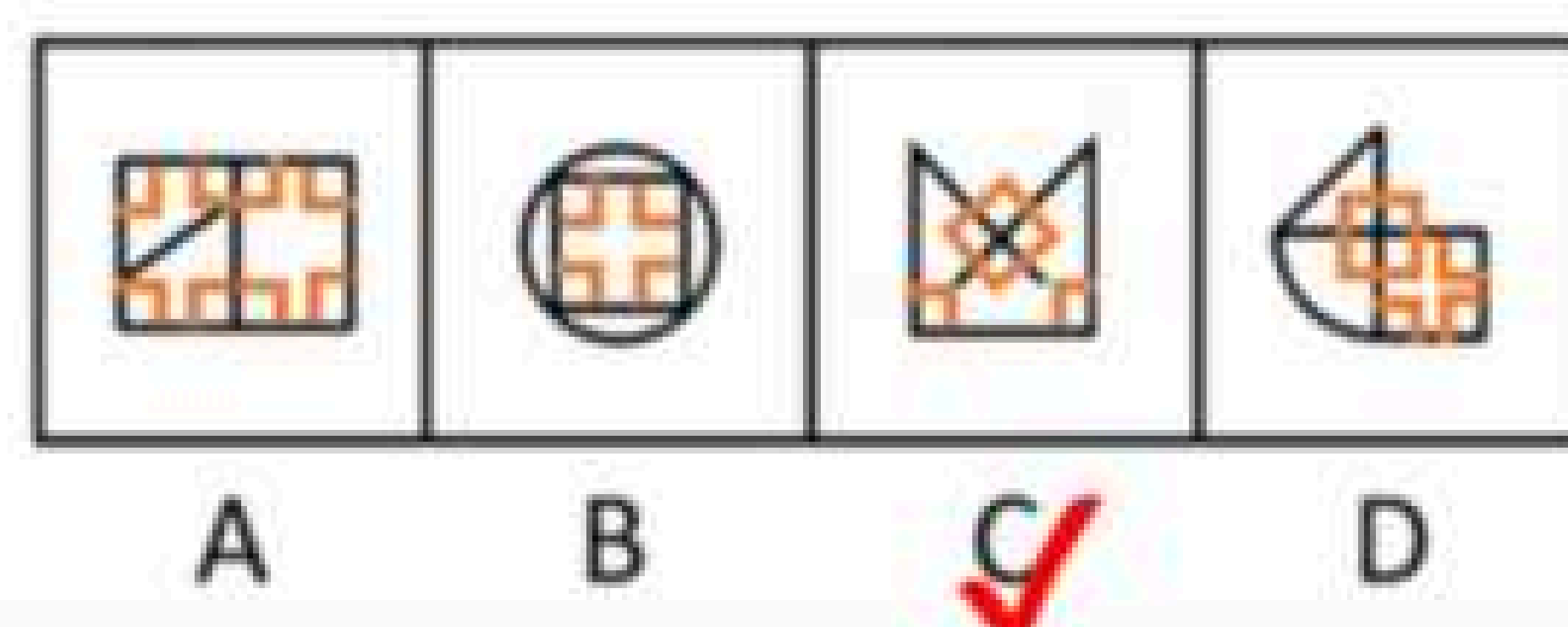
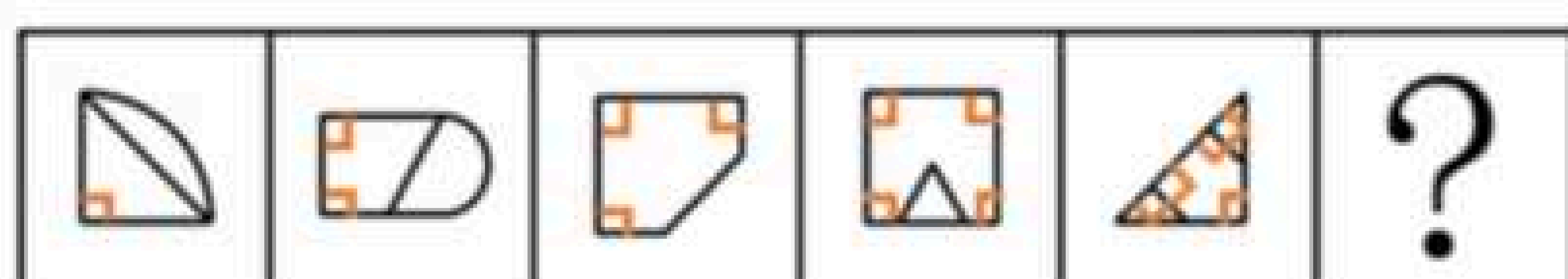
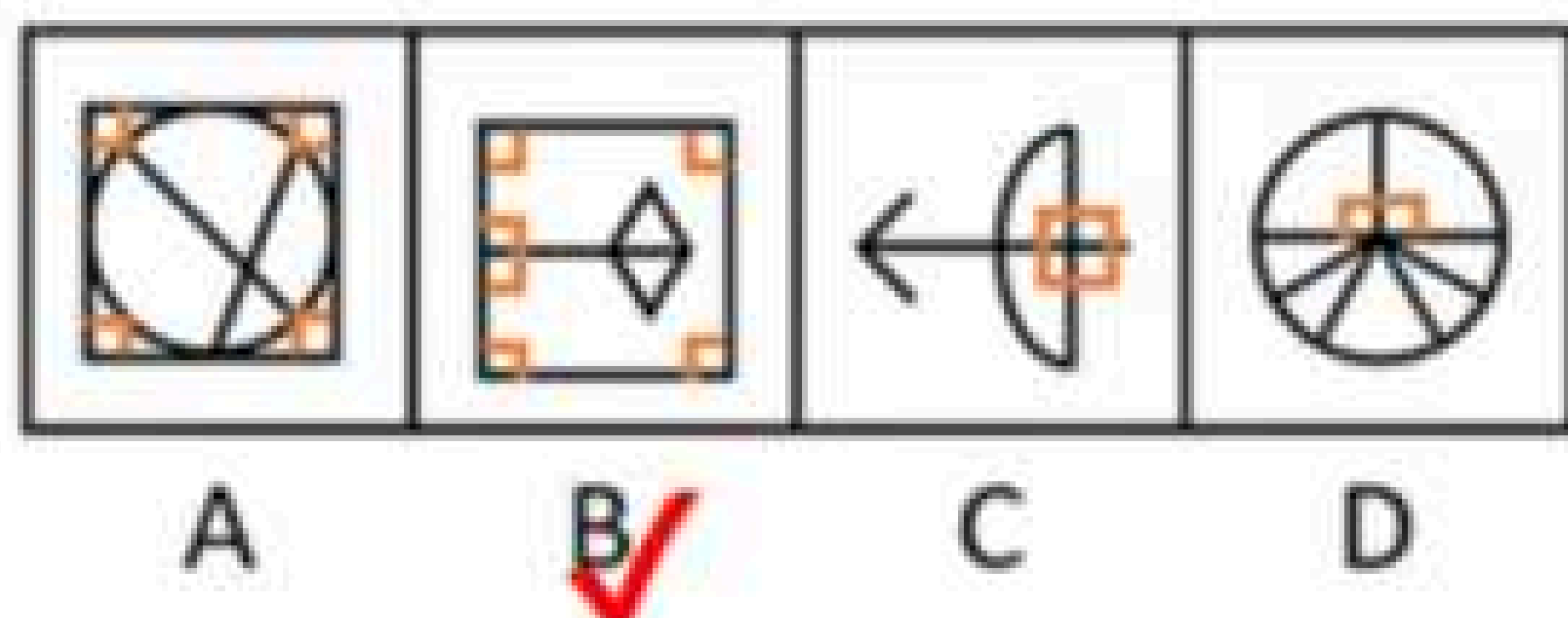
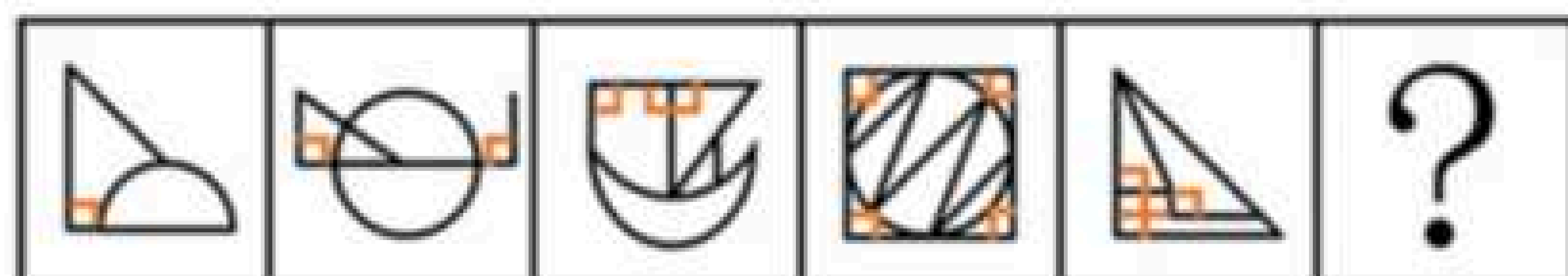
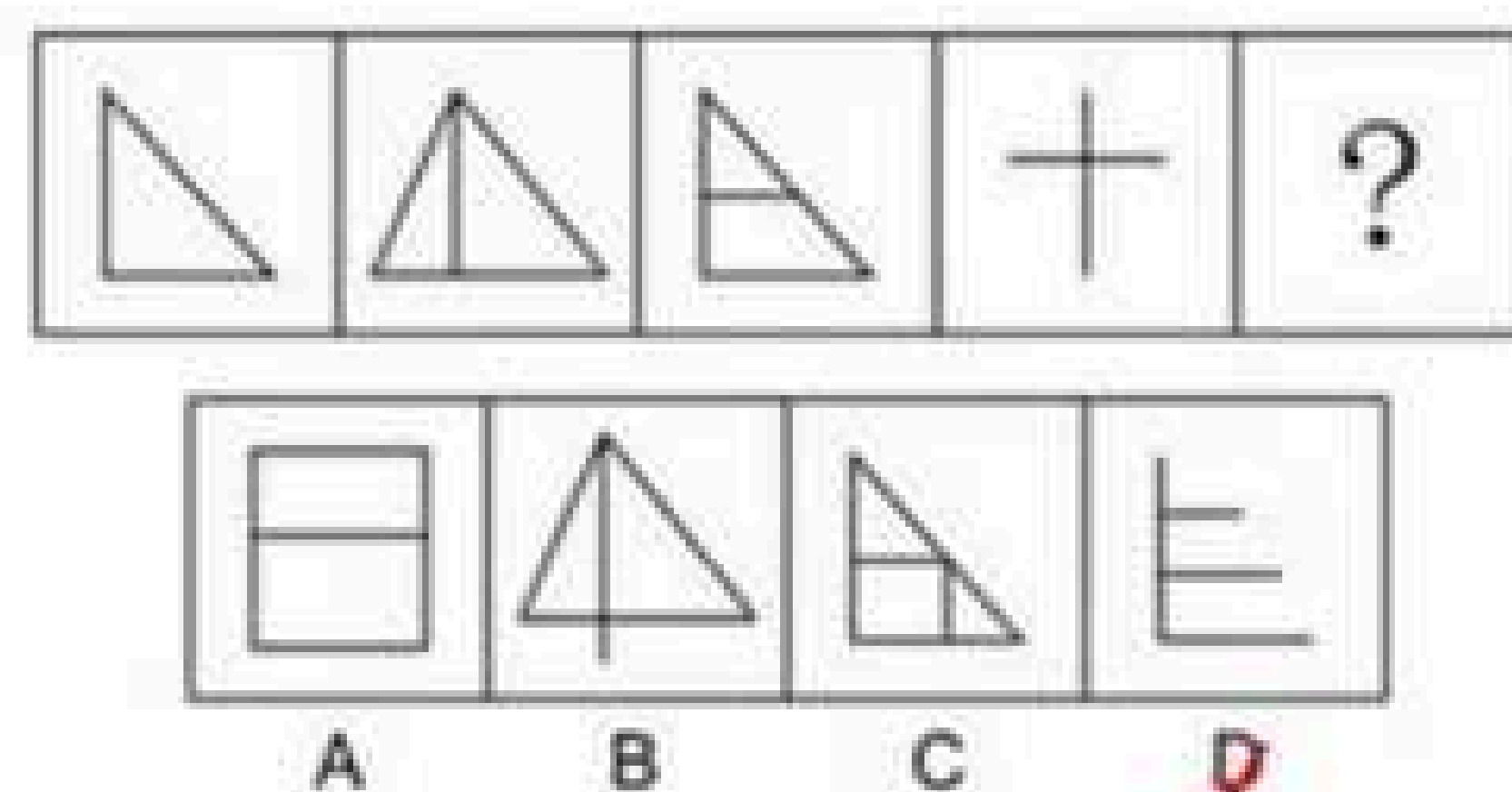
直角三角形、十字架、矩形（外框）



笔画



VS



➤ 直角特征：直角三角形、矩形

➤ 关注外直角

实战思维

直角 { 特征 — 直角三角形、十字架、矩形（外框）
易错 — 关注外直角

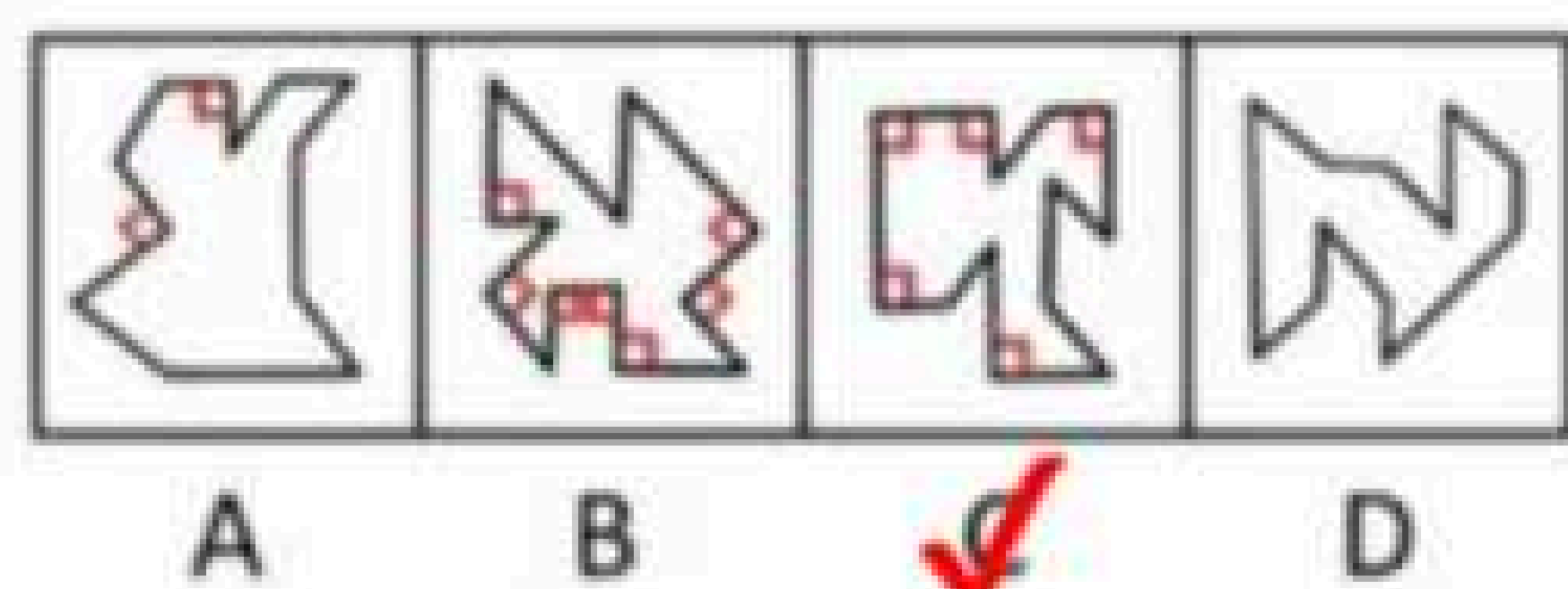
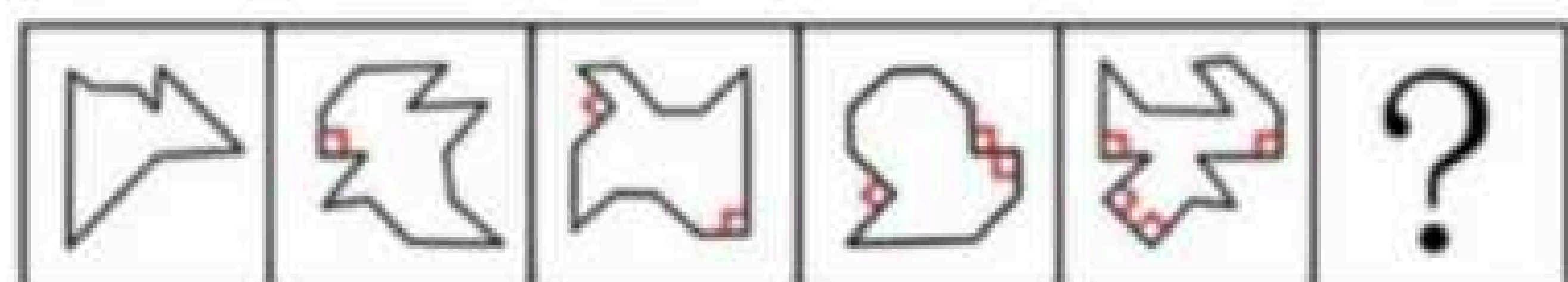
【直角】

①考点：考查直角为主

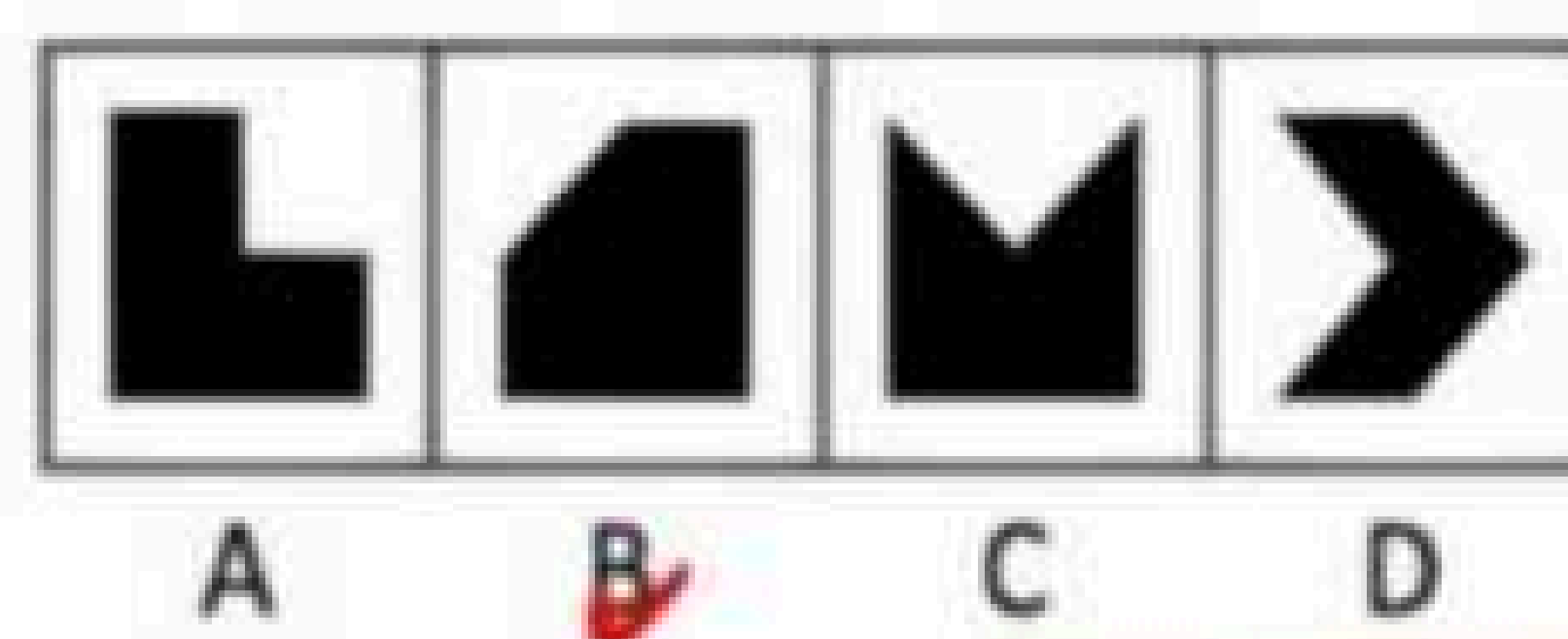
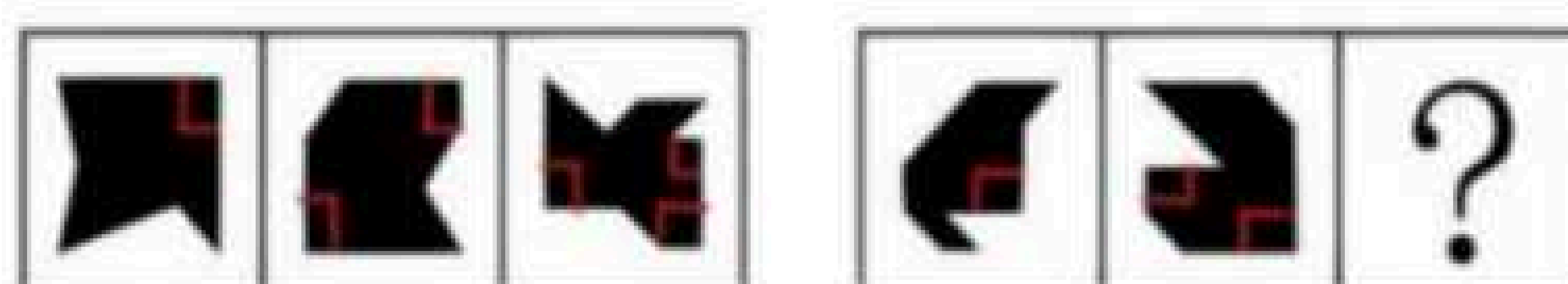
②命题者作图特点：直角三角形，十字架，矩形（外框）

易错提示：外直角别忘记数！

➤ 直角“易错点”



➤ 白色框 → 数外直角



➤ 黑色框 → 不数外直角



第六节:空间:六面体与四面体

1.六面体

概述

1. 如果靠想象力:注意折叠方向
2. 如果靠技巧:所有的方法都是排除错误选项的(单一技巧都有缺点)

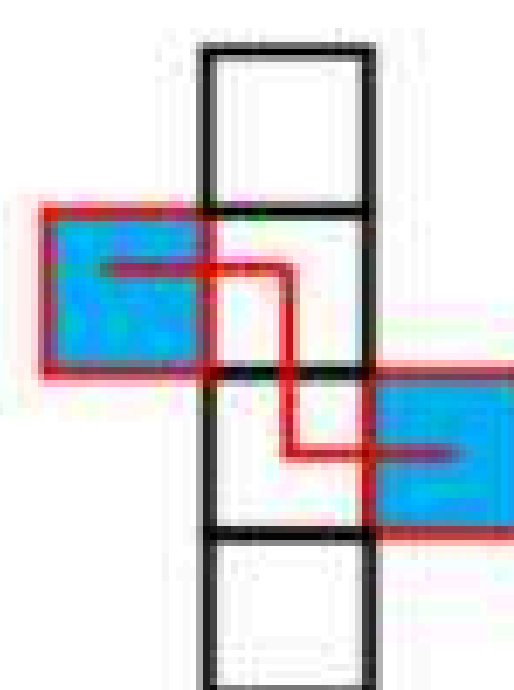
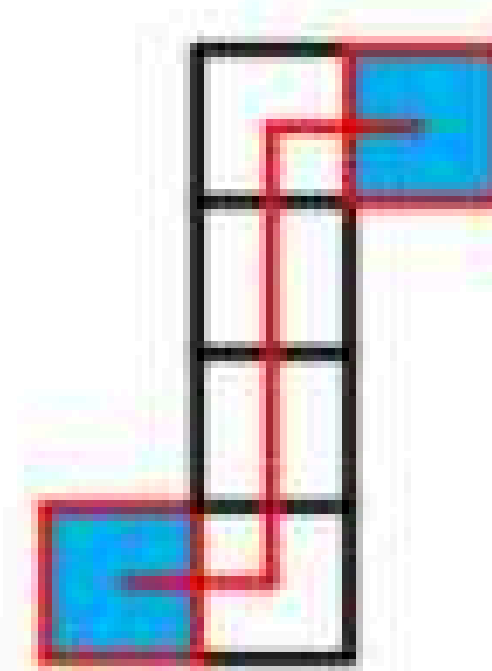
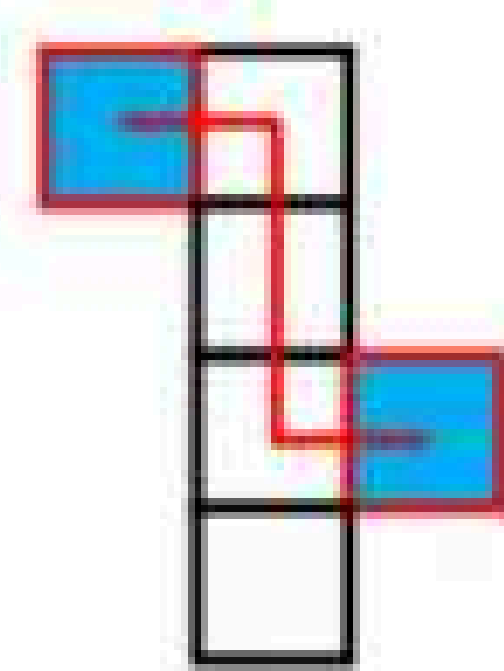
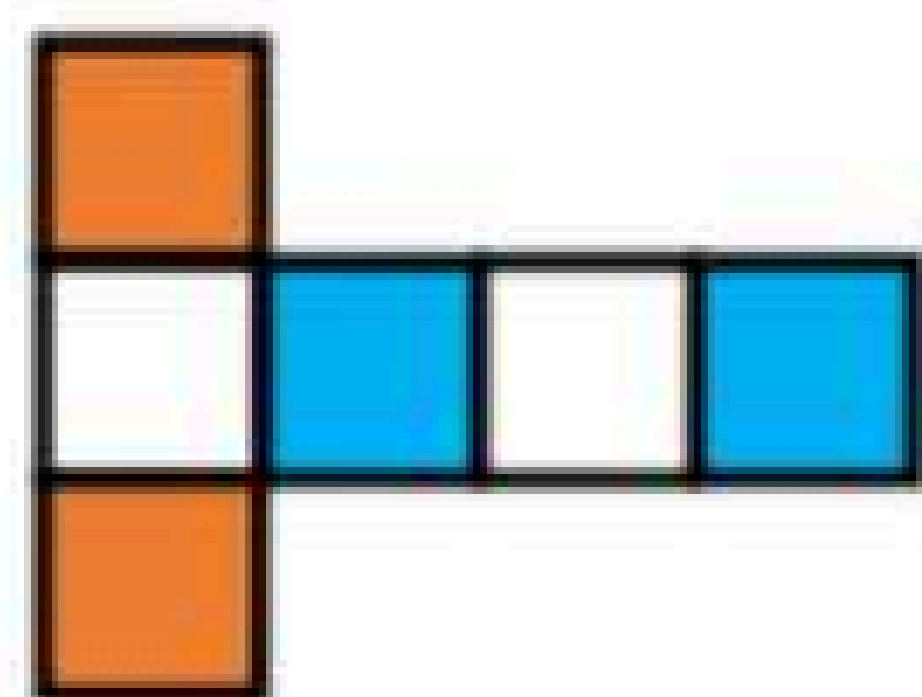


小红书: @贝栗子

答题思路

- 第一步:观察题干与选项,出现“相对面”直接排除
- 第二步:有“唯一边或点”,优先用“箭头法”解题(备选“画边法”)
- 第三步:没有“唯一边或点”
 - (1) 2个面近,1个面远,优先用“公共边”
 - (2) 3个面近,优先用“公共点”

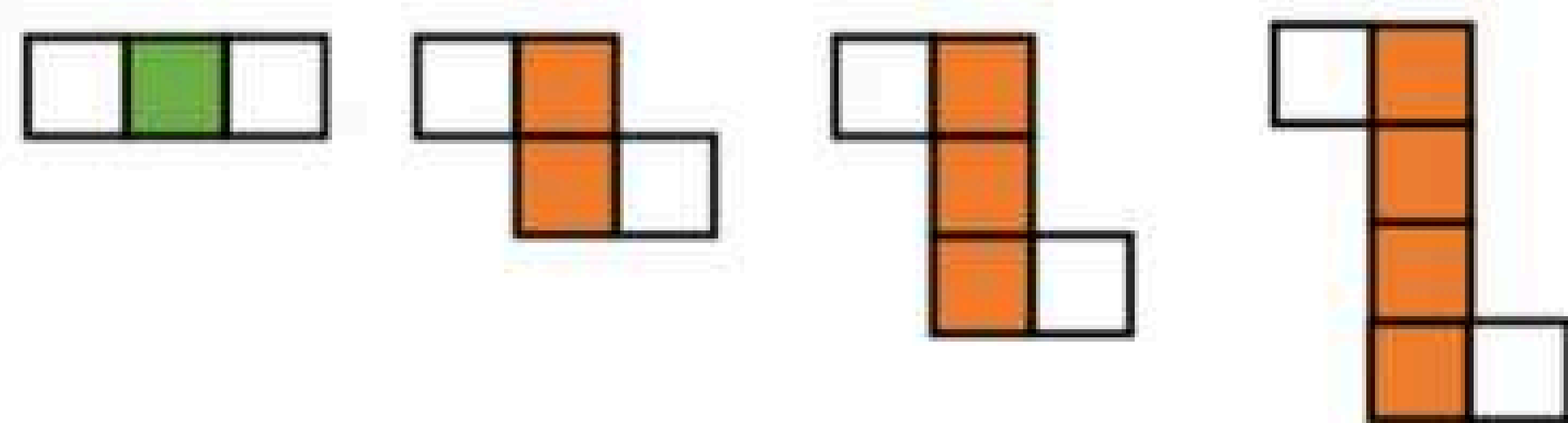
● 相对面



1. 同行或同列相隔一个面

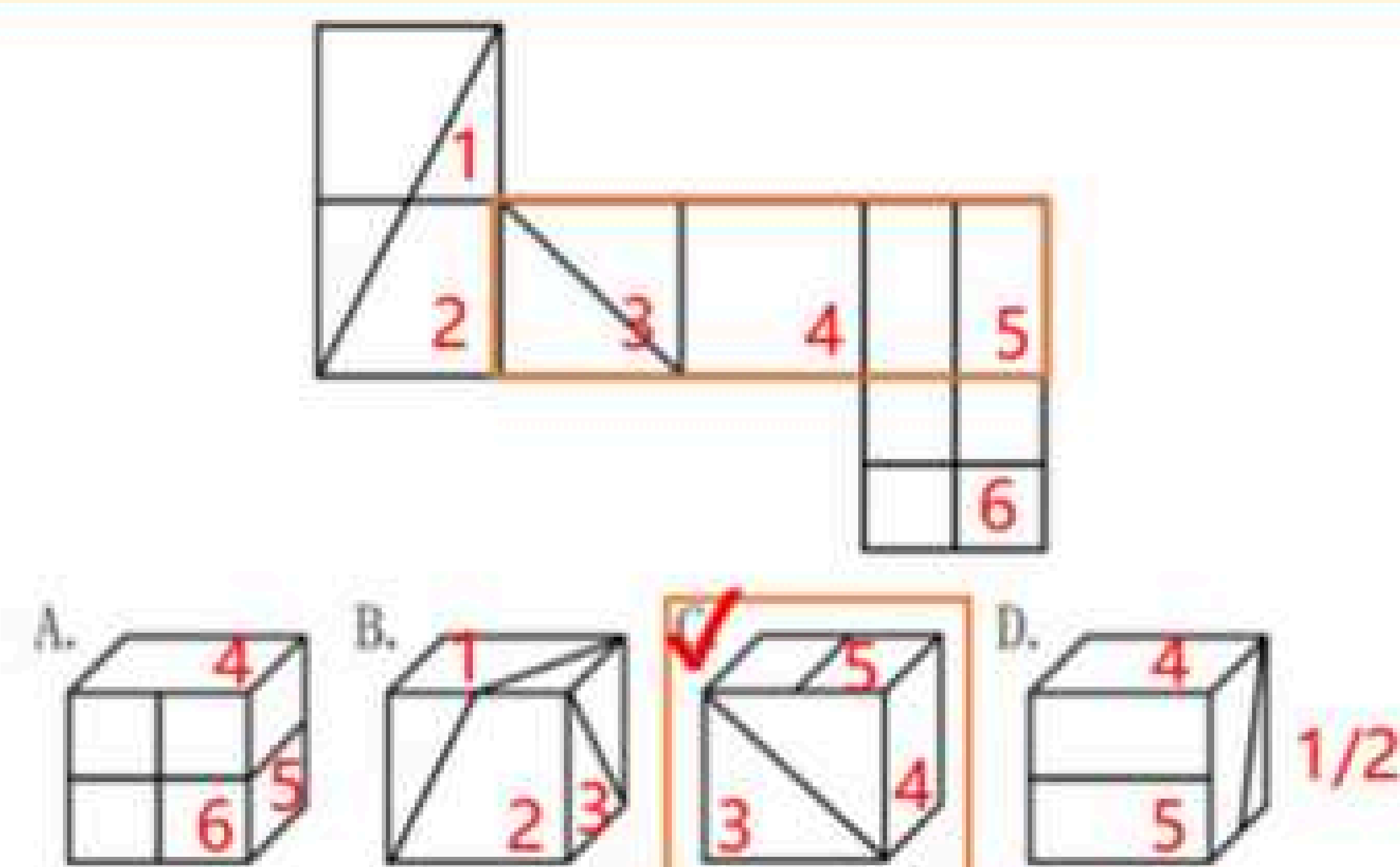
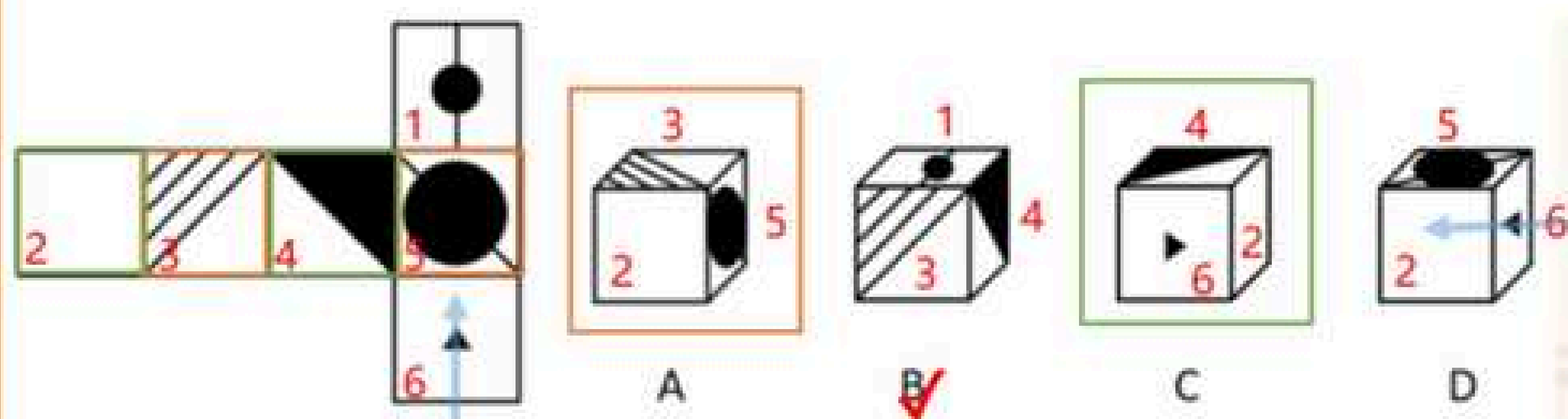
2. Z字形两端(紧邻Z字中线的面)

➤ 速记:中间隔1个,或隔1列都是相对面



➤ 优点: 很快, 不用动脑

➤ 缺点: 实战出现少, 能排除个别





来源于小红书@贝栗子

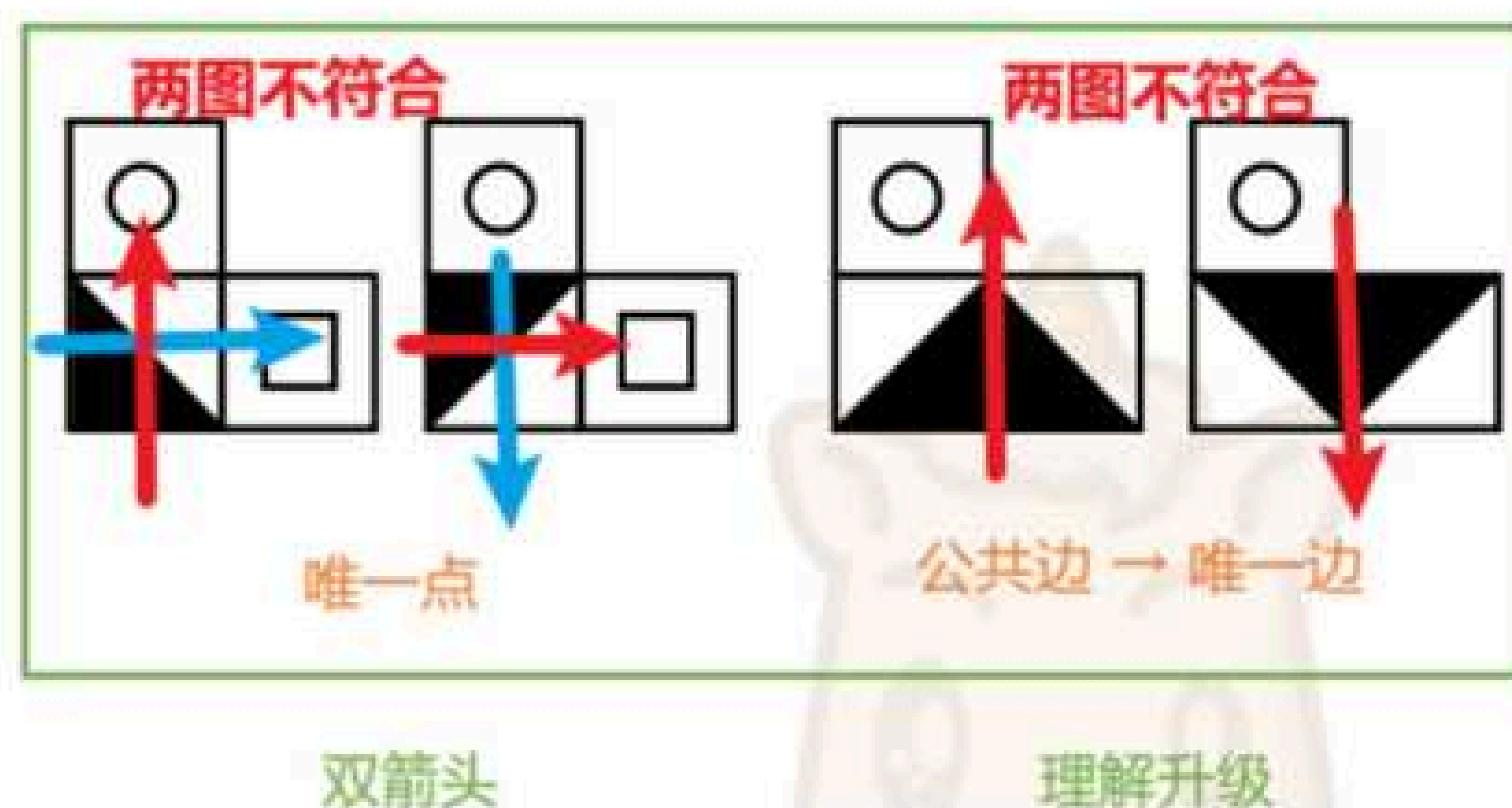
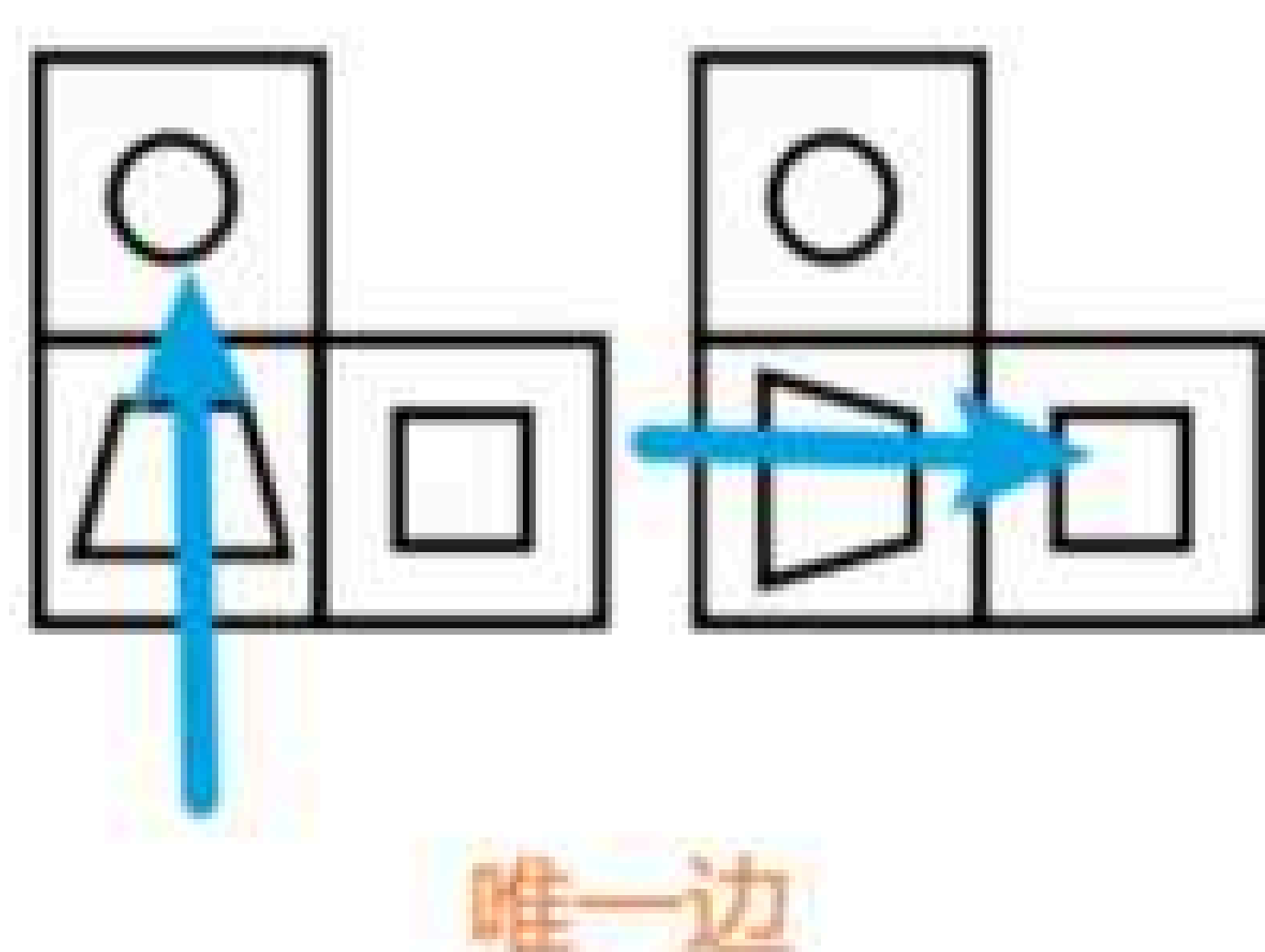
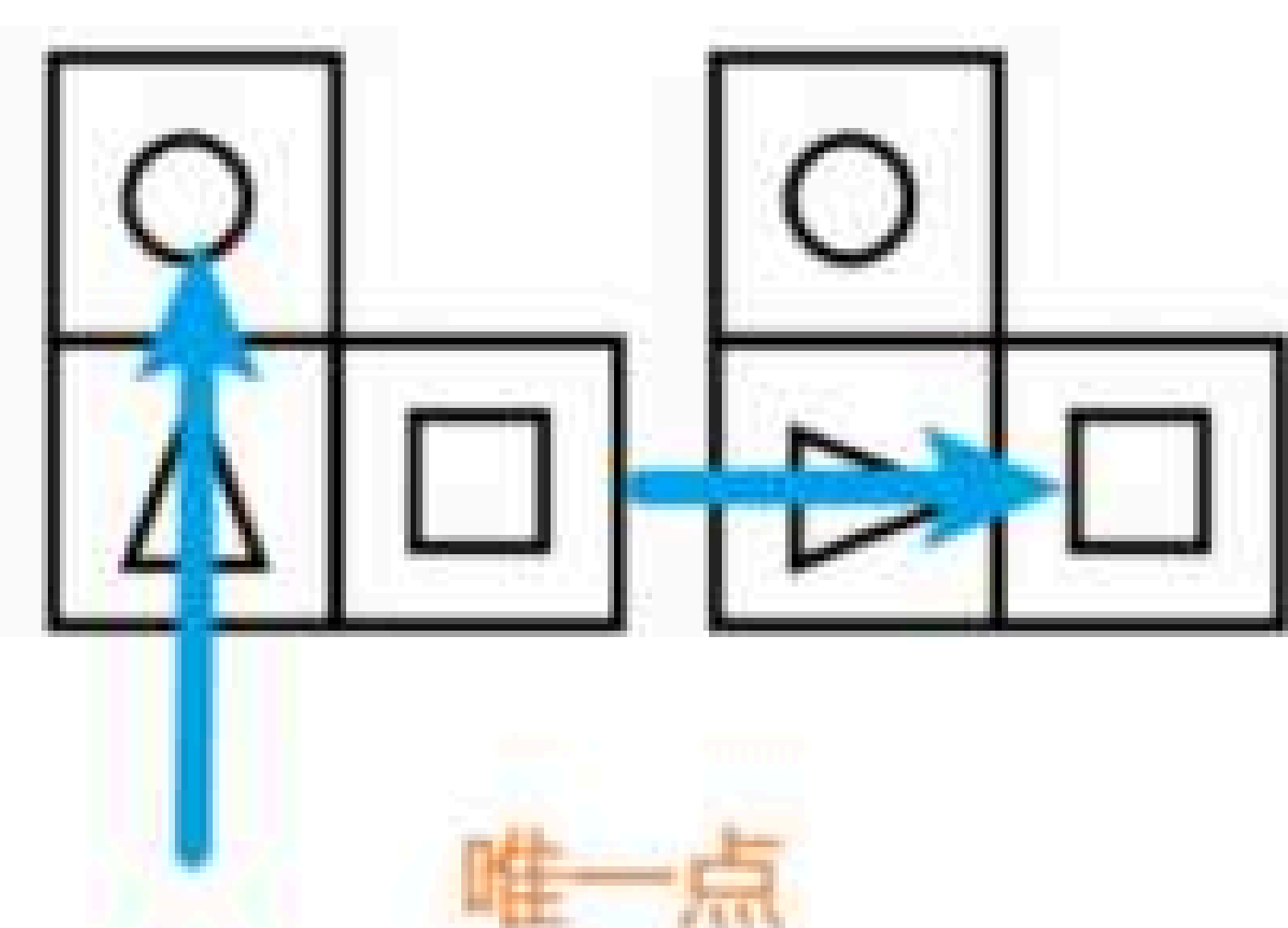
● 箭头法

口诀：找唯一，定方向

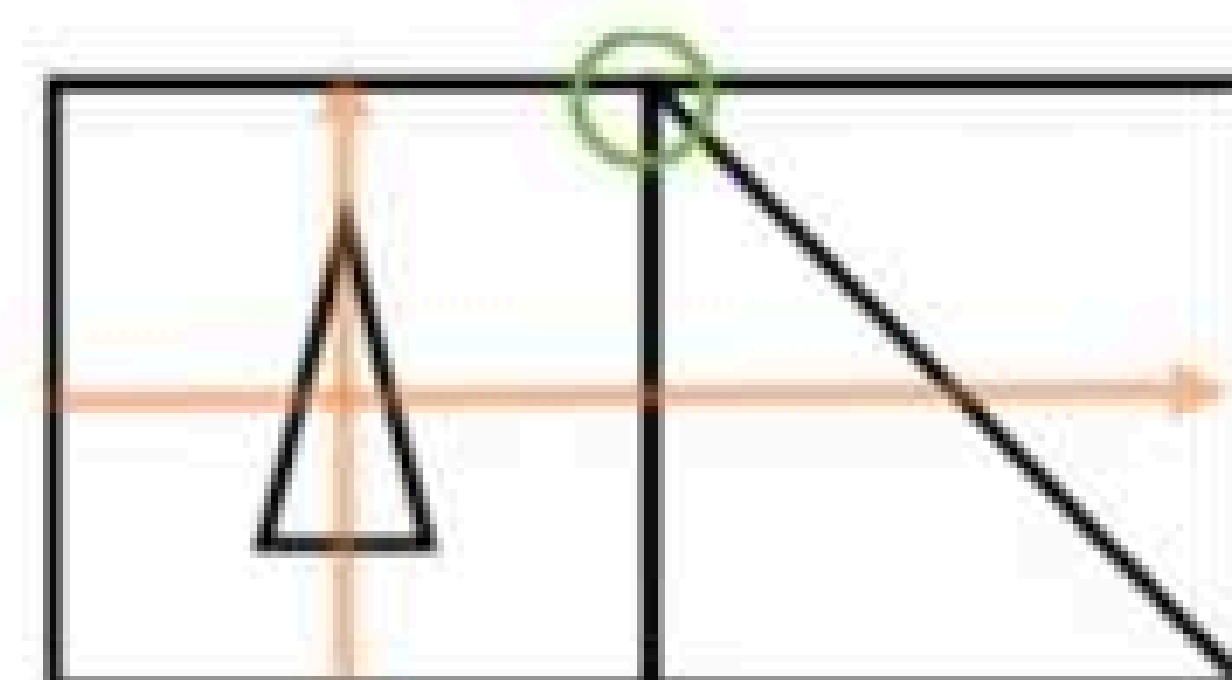
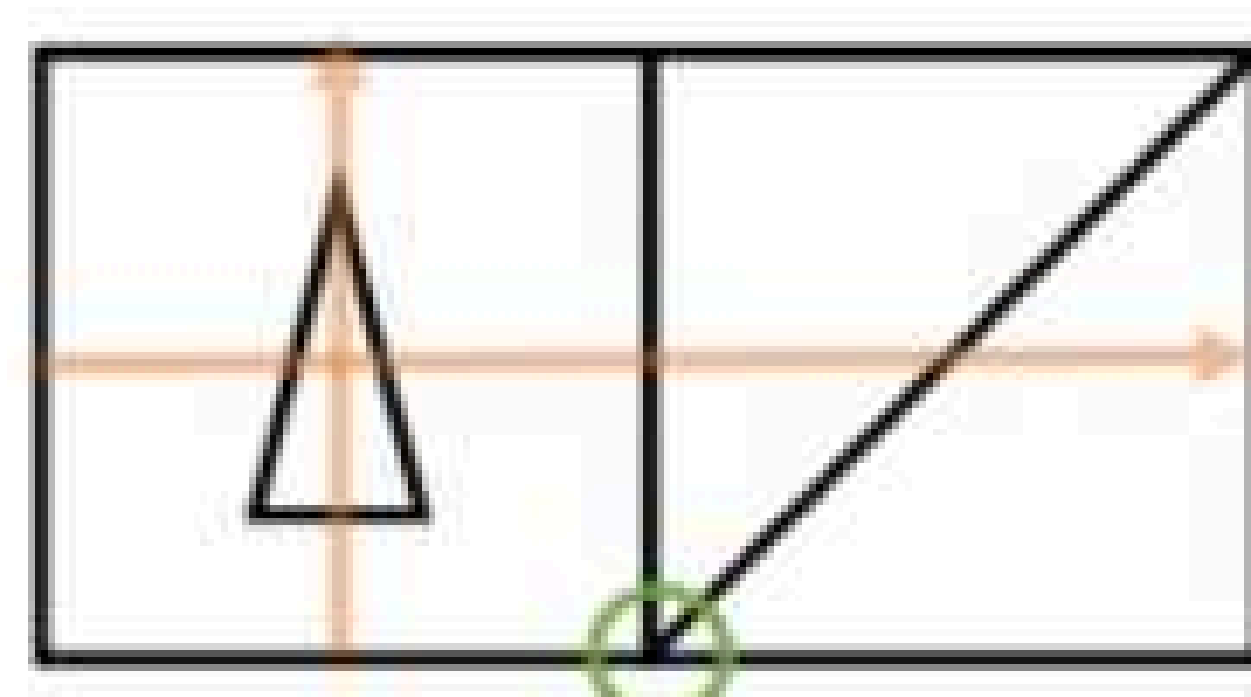
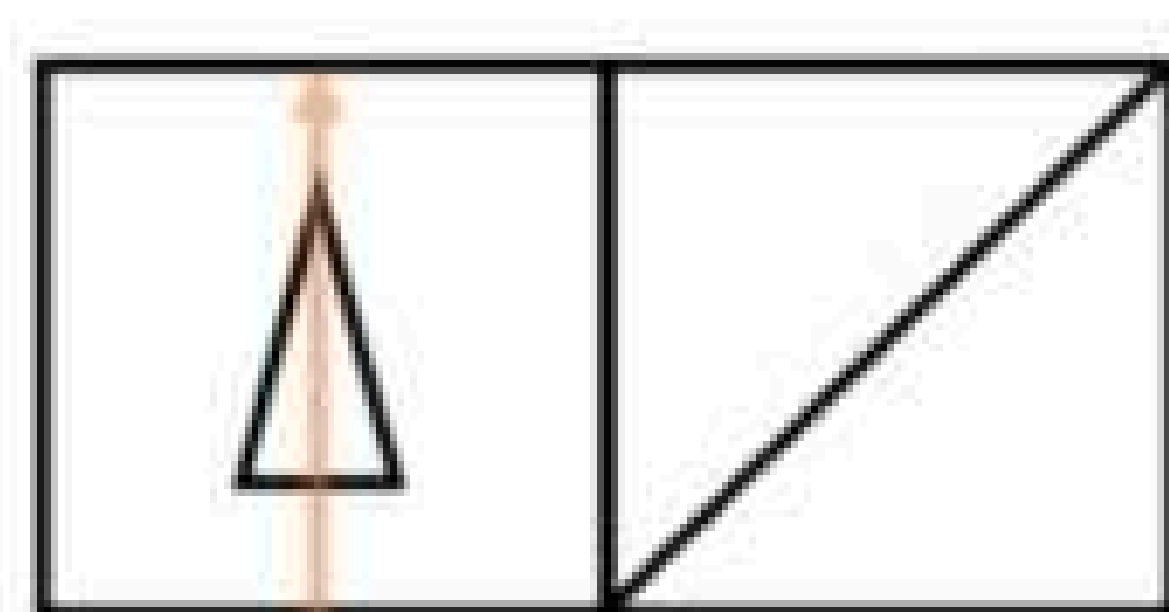
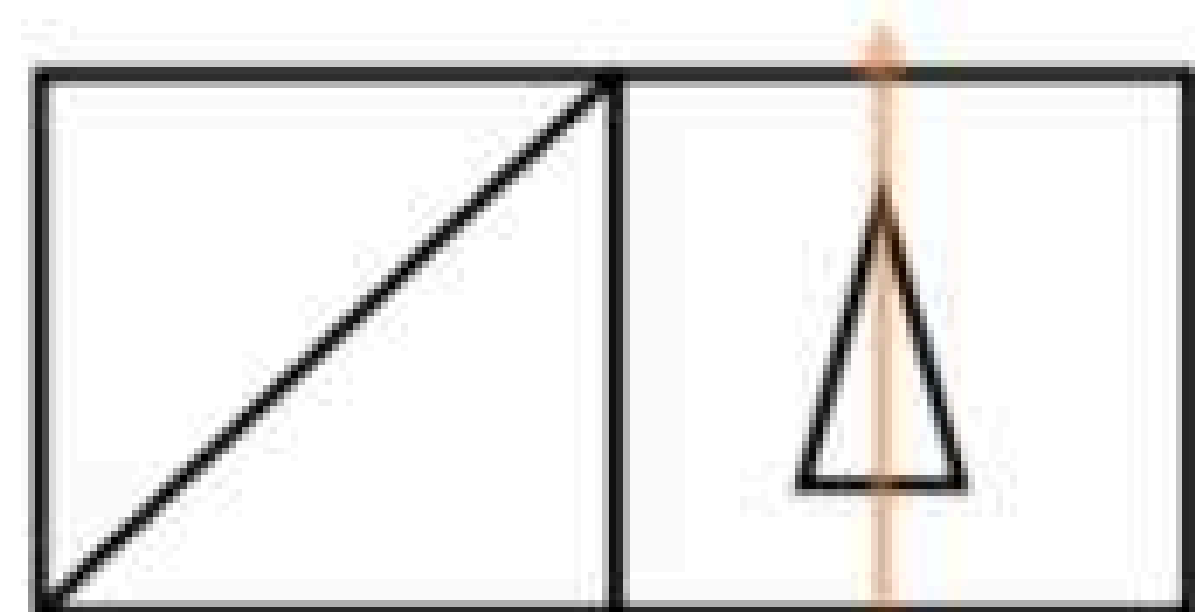
- ① 结合选项，找一个唯一点或唯一边
- ② 以唯一点或唯一边，作为参照物，画出箭头方向

怎么找“唯一”？

- ① 可以转动讲义（试卷），箭头正上方，更好对比
- ② 箭头方向任意，但是需要保证每幅图一致



◆ “箭头法” 真实测评

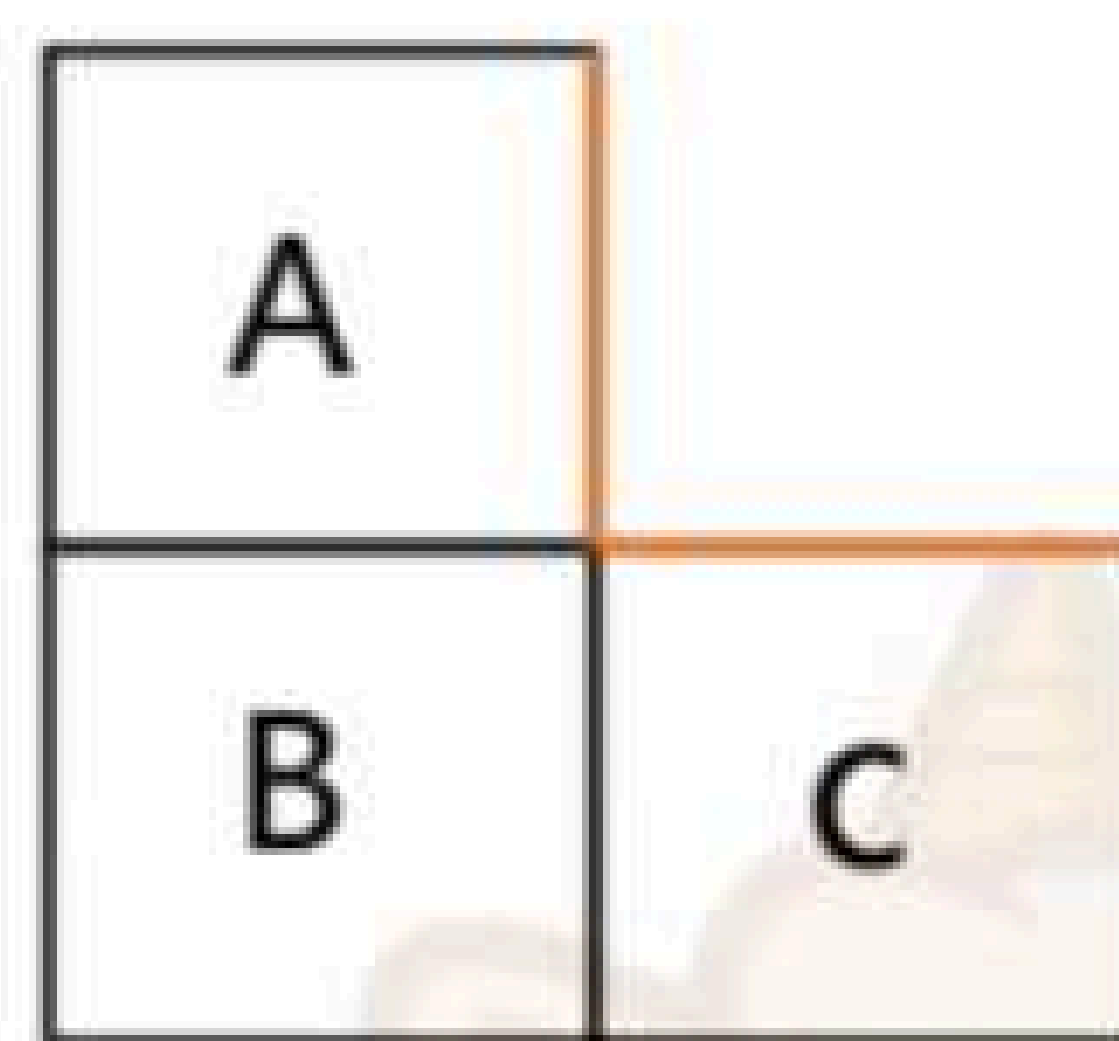
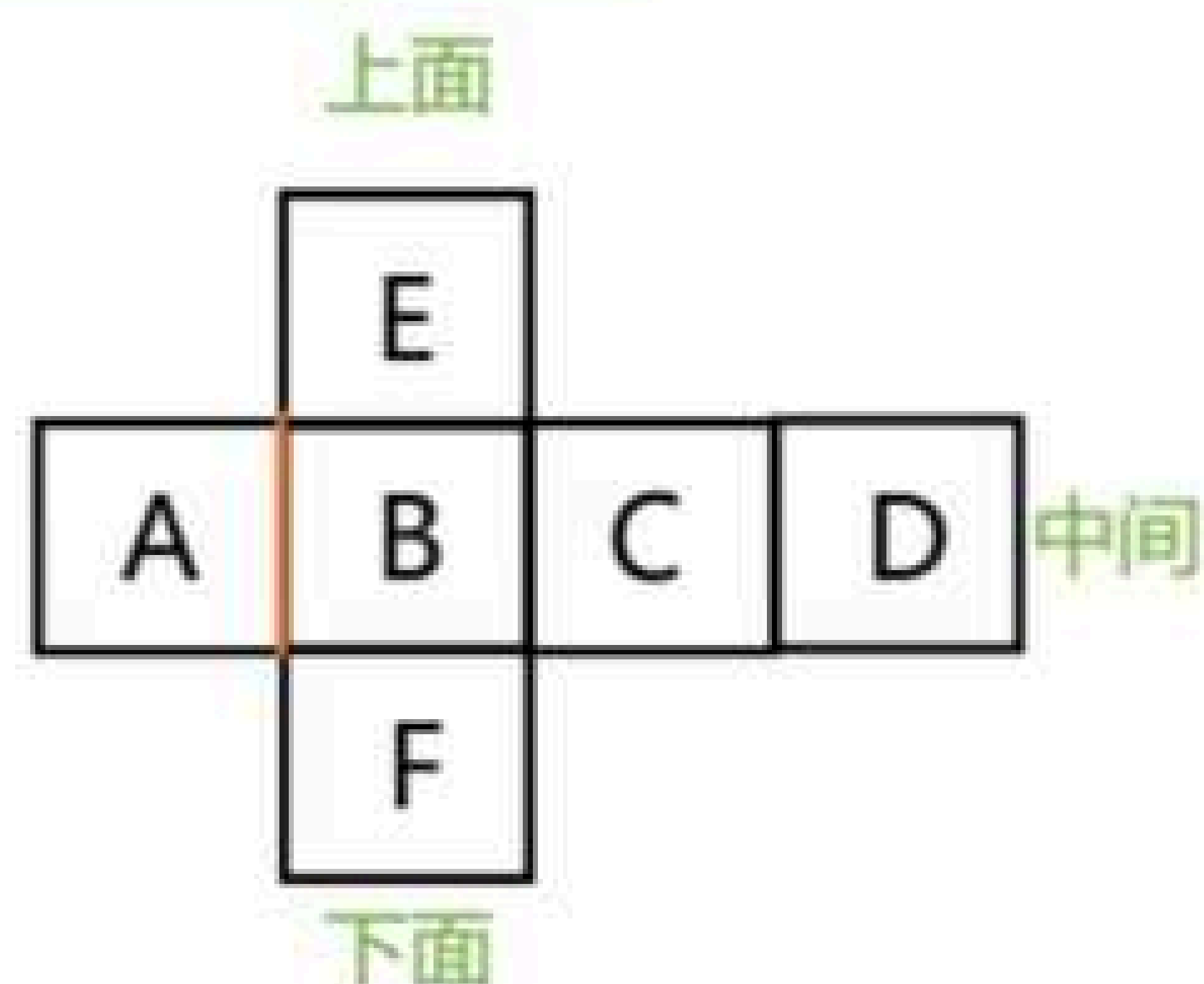


➤ 优点：上下左右，大致方位-区分很快

➤ 缺点1：都在右边，容易忽略细节（“双箭头”解决）

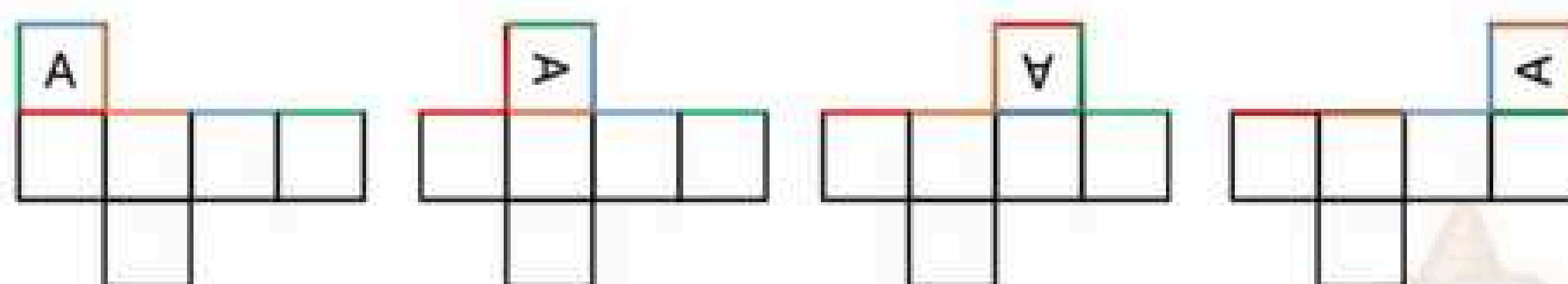
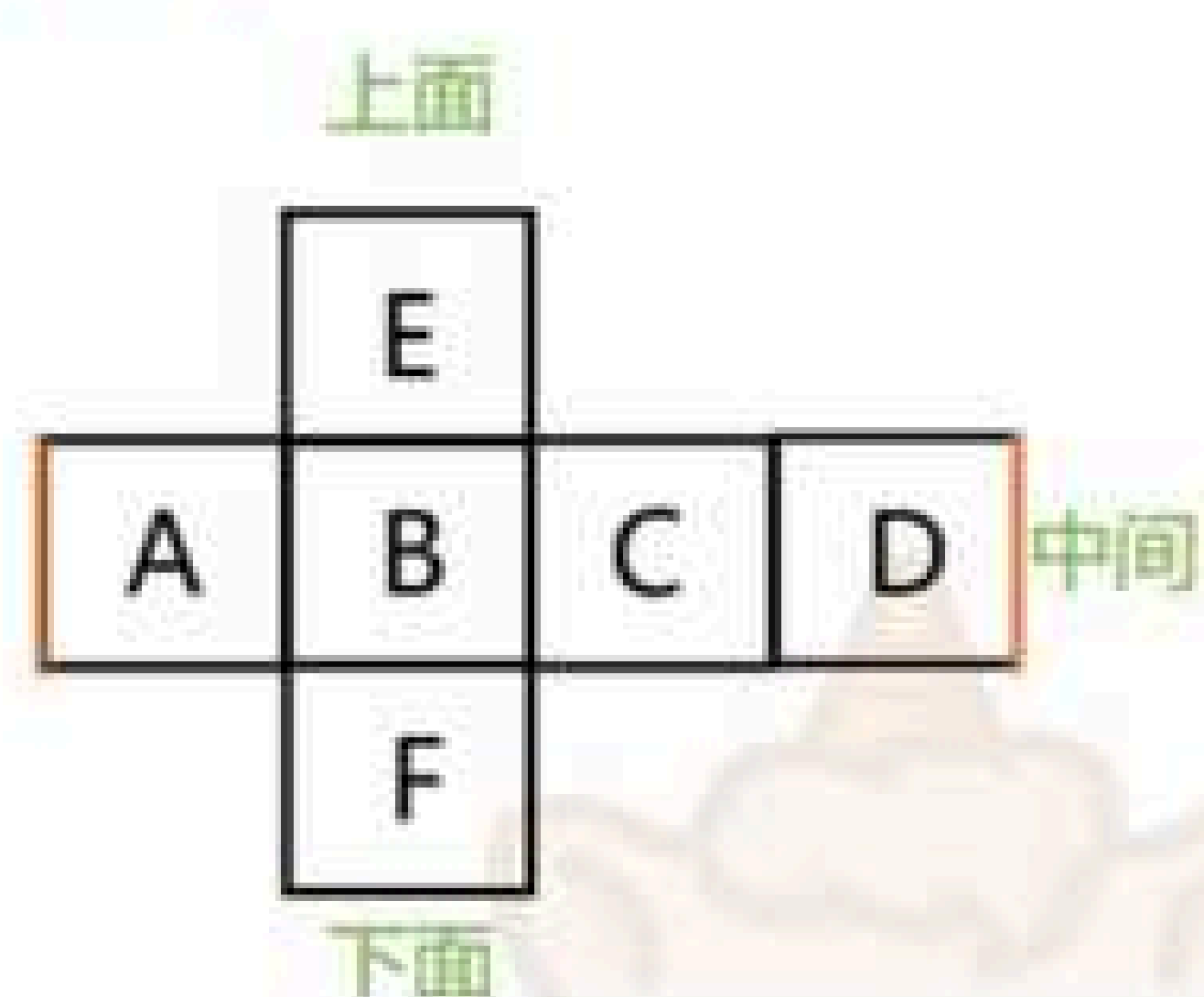
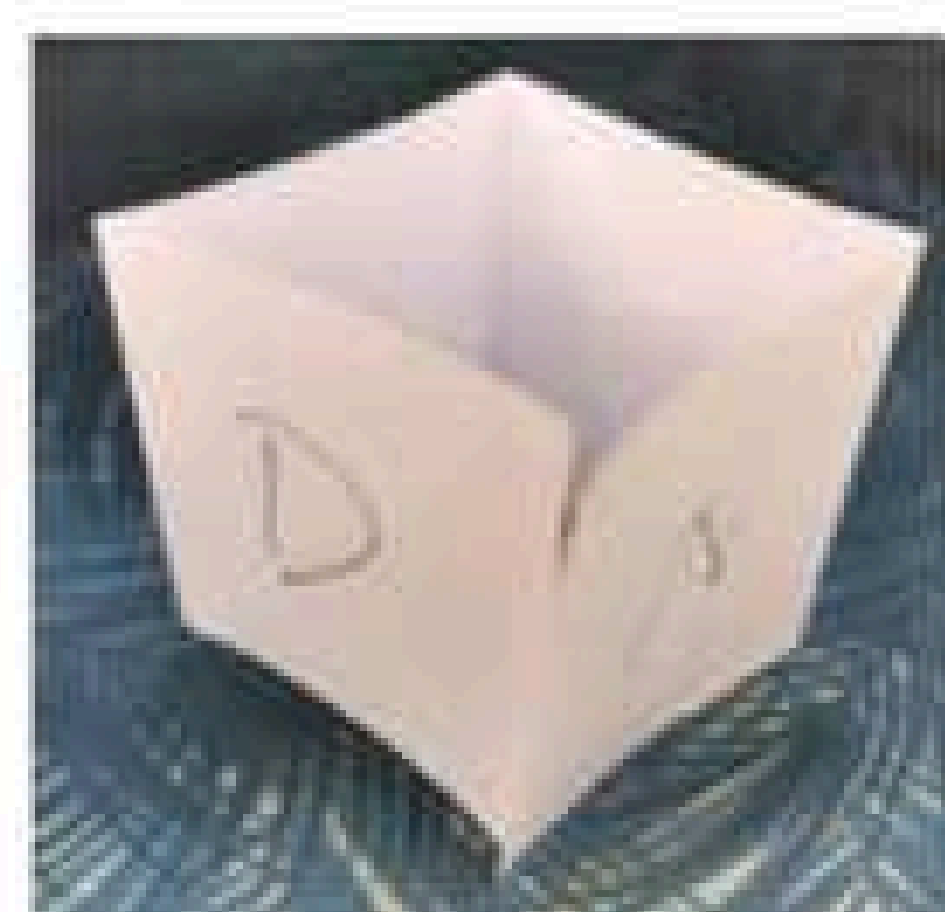
➤ 缺点2：没有直接靠着，需要移动（“公共边”解决）

● 公共边



是两个图形共同拥有的边

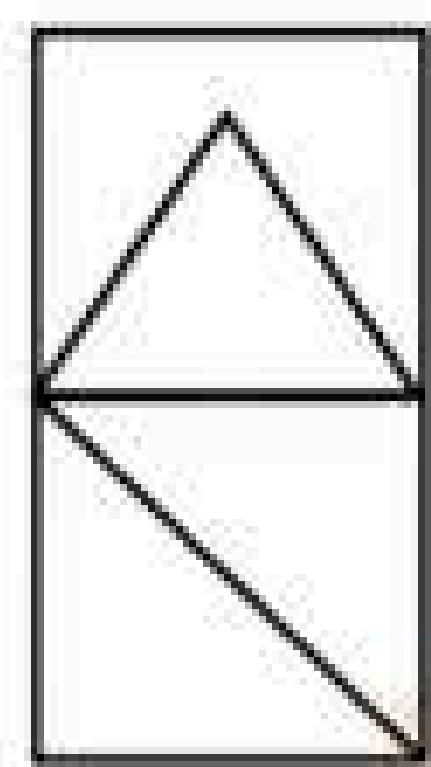
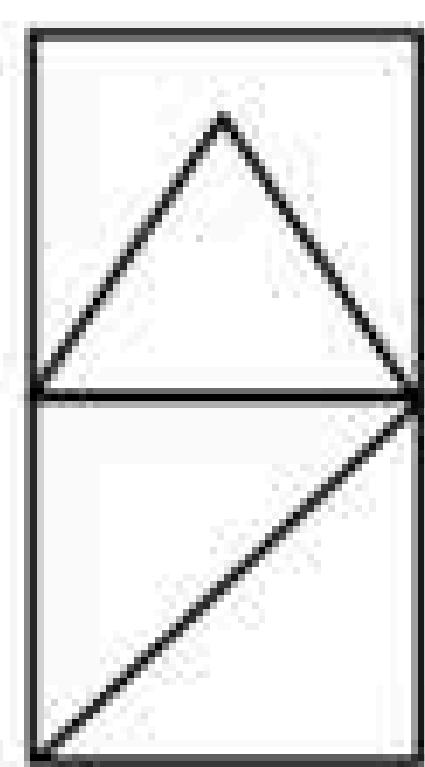
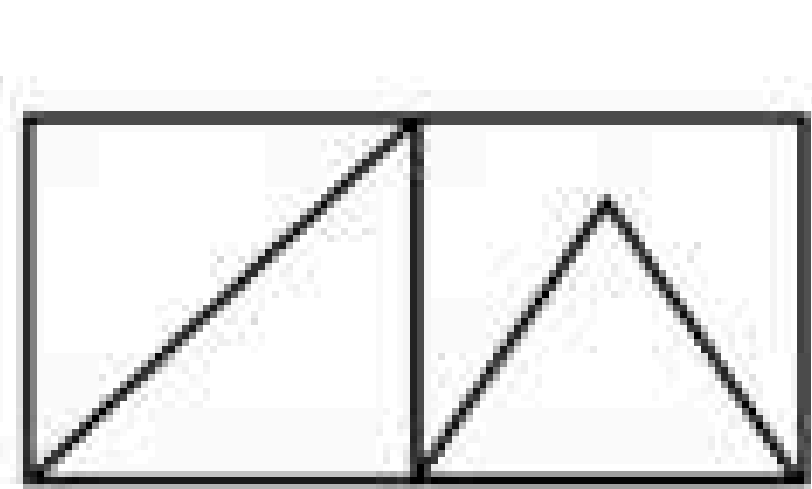
平面图中构成直角的两条边是同一条边



一列/行连着4个面，两端是同一条边

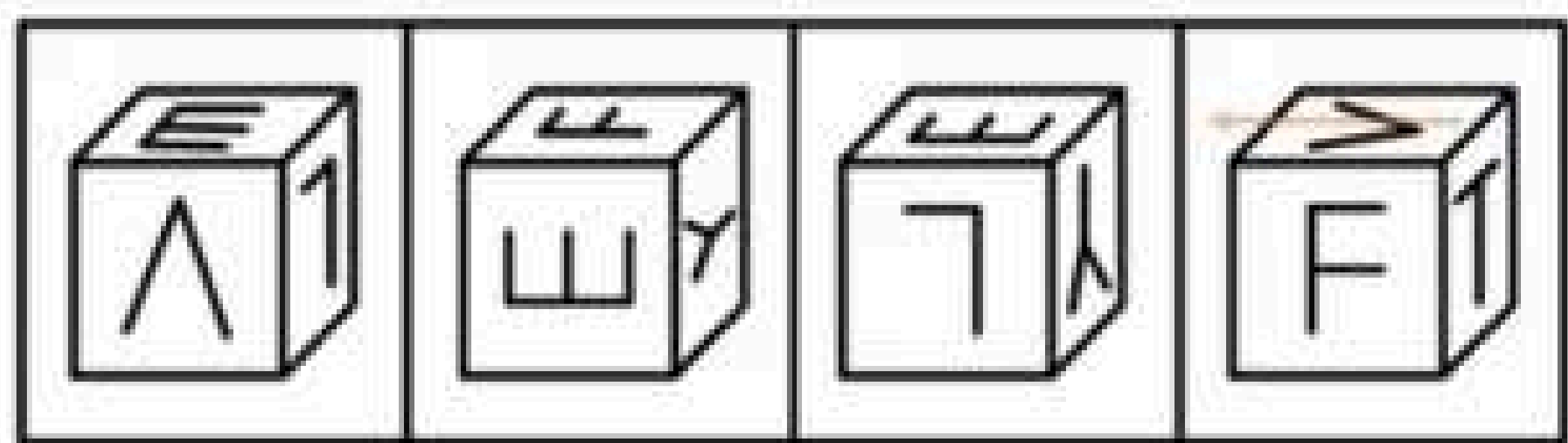
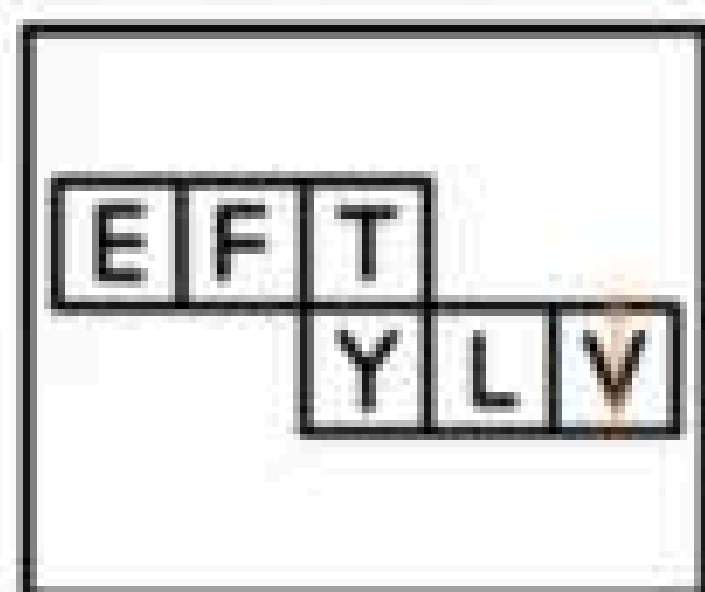
1-4-1“直角边”随便“滚”

◆ “公共边” 真实测评

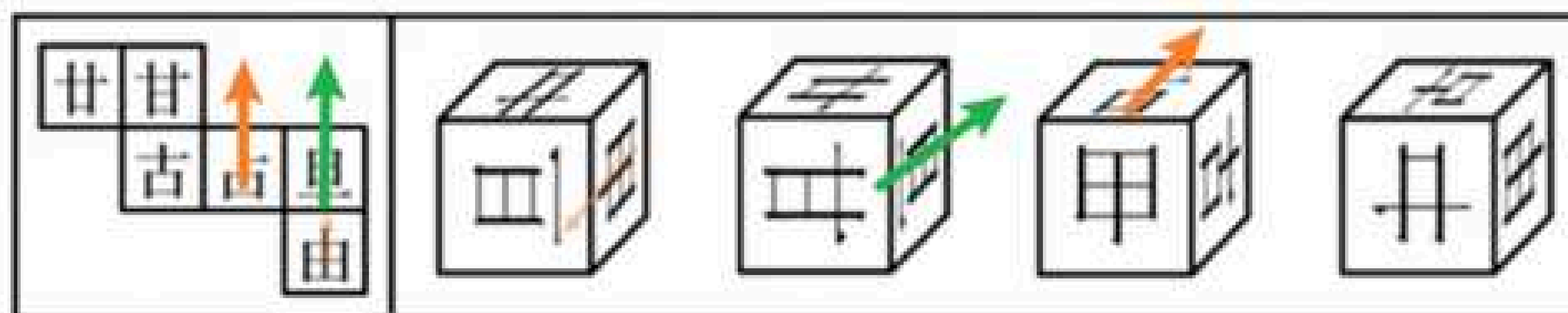


- 优点：公共边周边图案-区分很快
- 缺点：一样的图案，左右容易混淆（搭配箭头法可以解决）

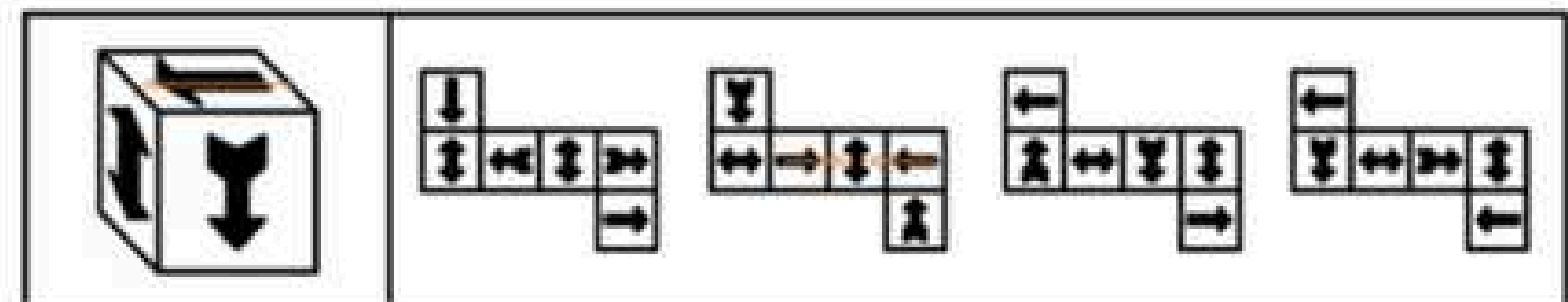
母题



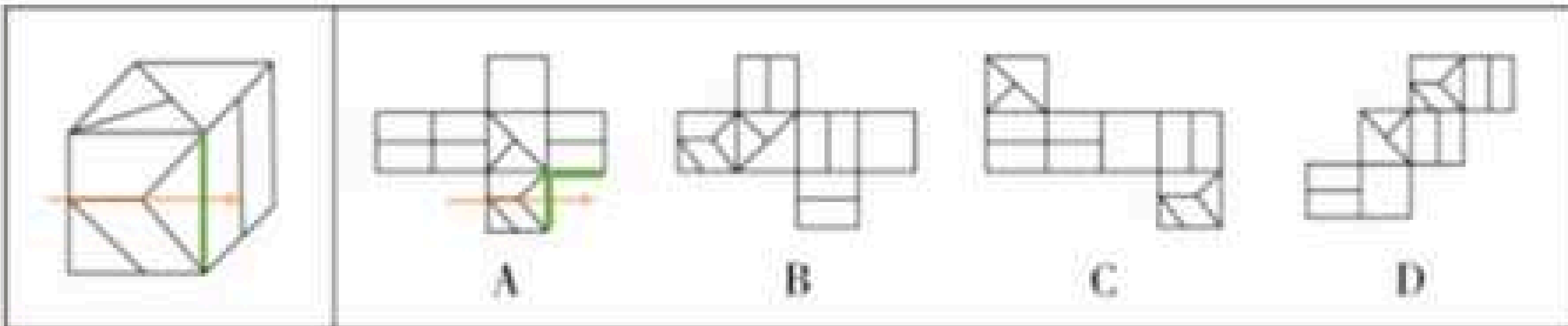
A B C D



A B C D



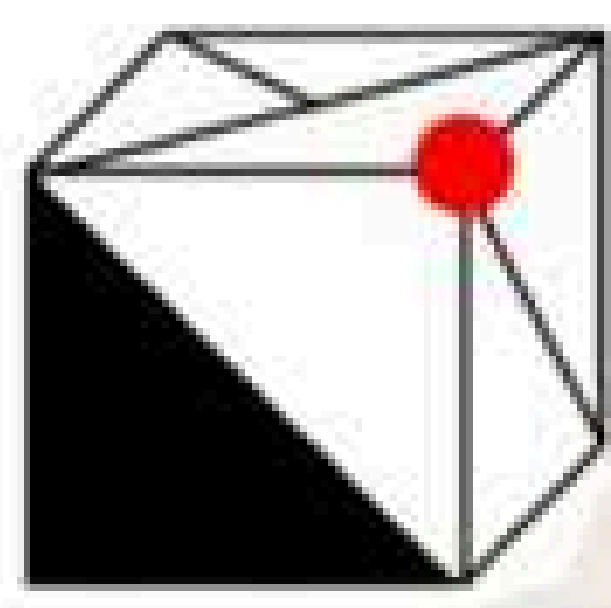
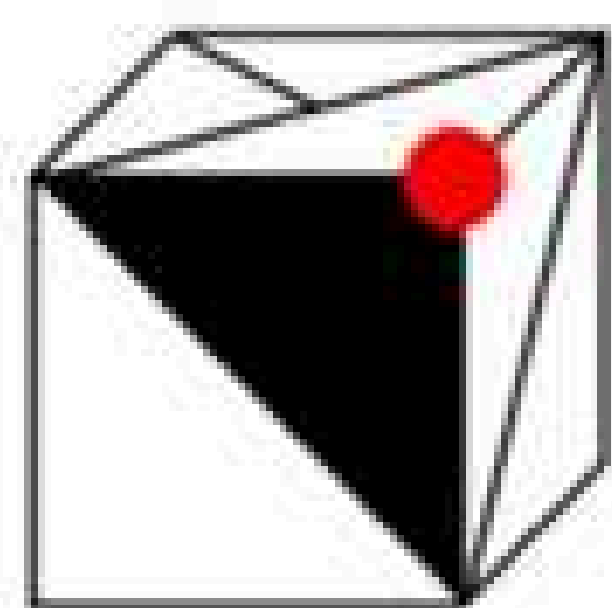
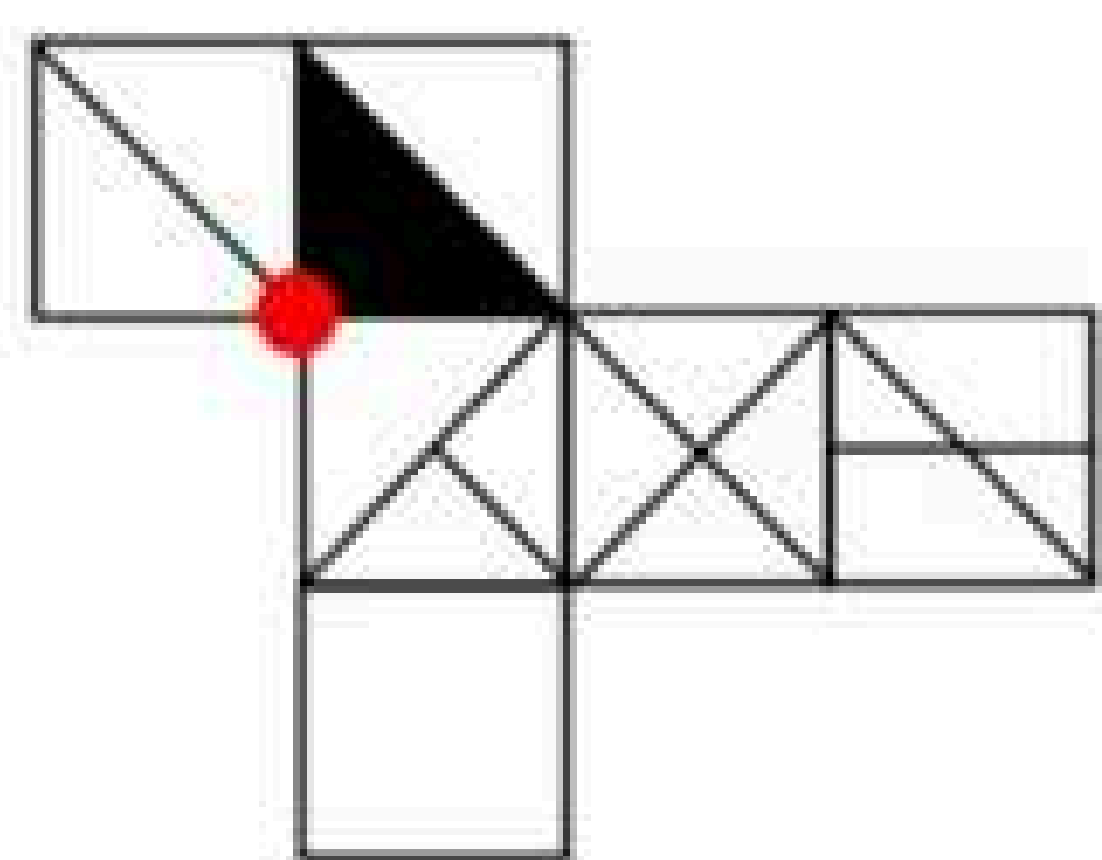
A B C D



A B C D

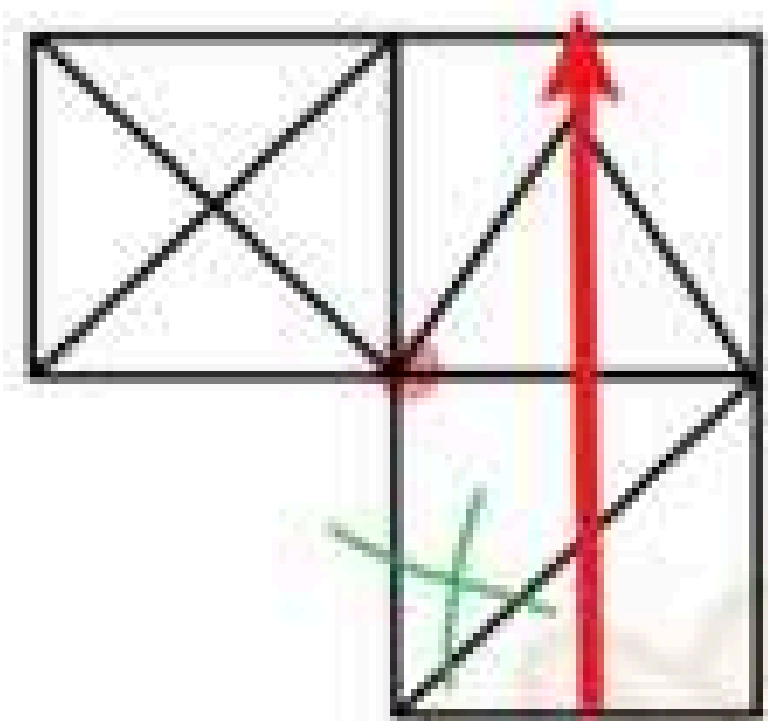
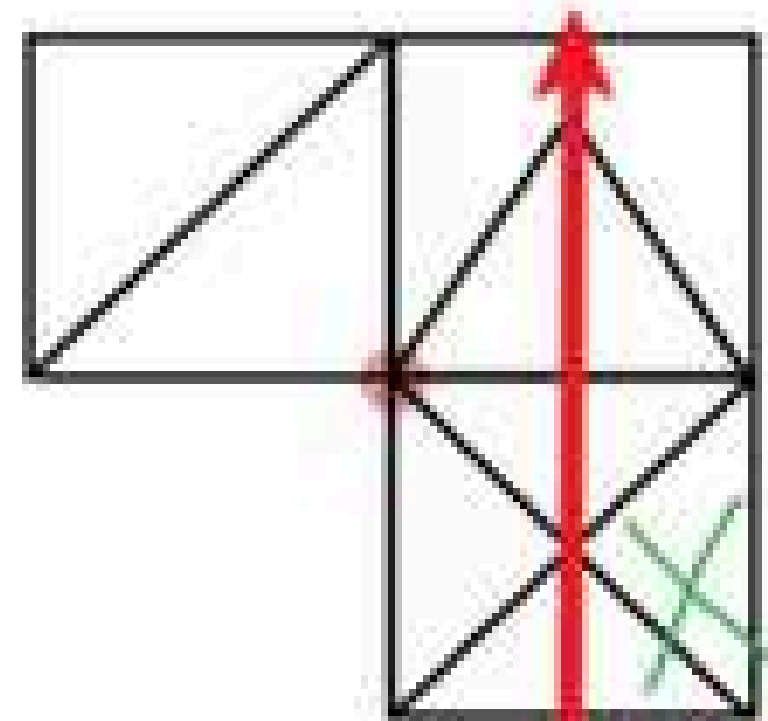
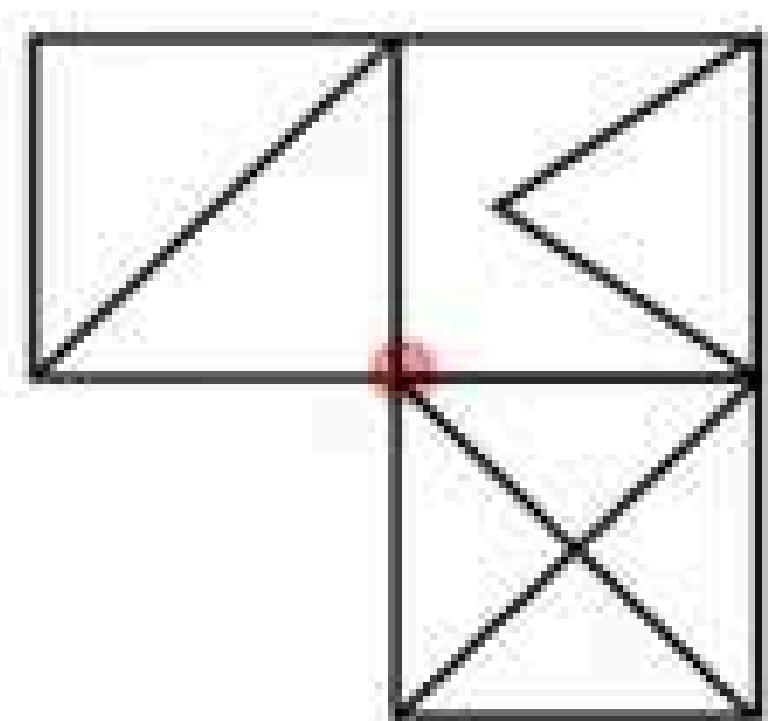
- 箭头法（主）+公共边（辅） ➤ 找唯一，定方向

● 公共点



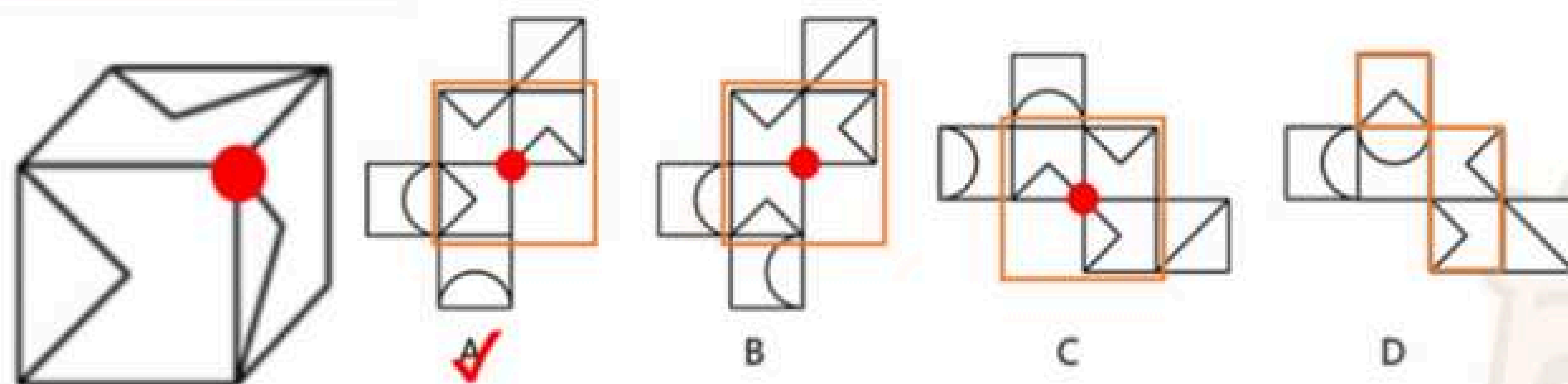
- 相邻三个面的公共点是唯一的
- 折叠前后相邻关系（公共点引出的线或图形）保持不变

◆ “公共点” 真实测评

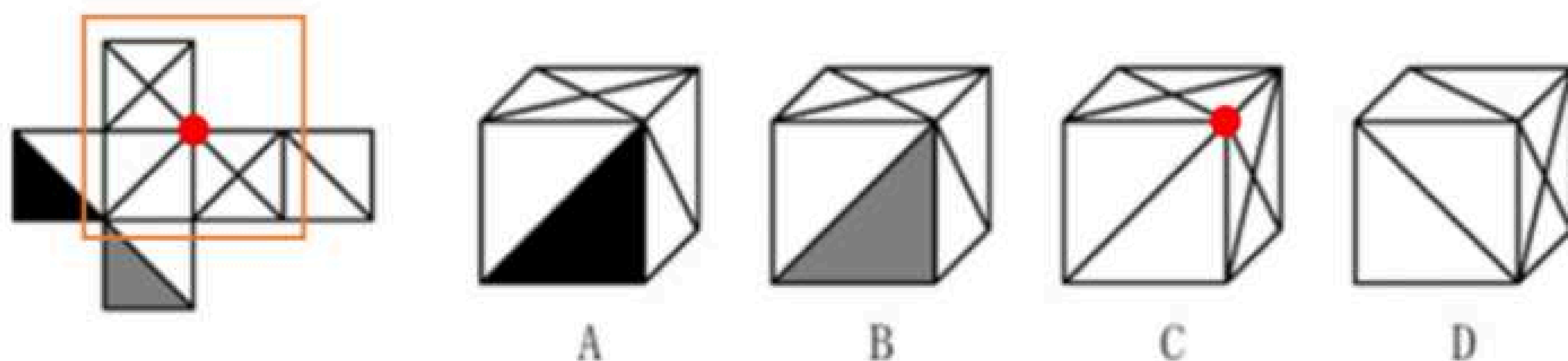


- 优点：①唯一性，不用纠结选哪个公共边；② 图案和线条排除快
- 缺点：三个面相对位置错了，顺时针还是逆时针区分不了

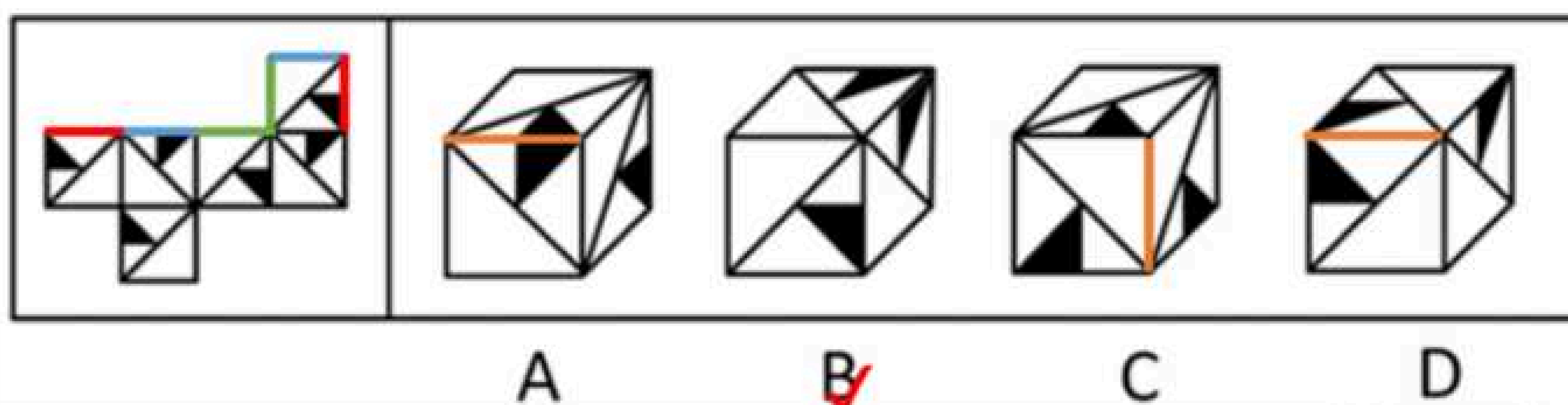
母题



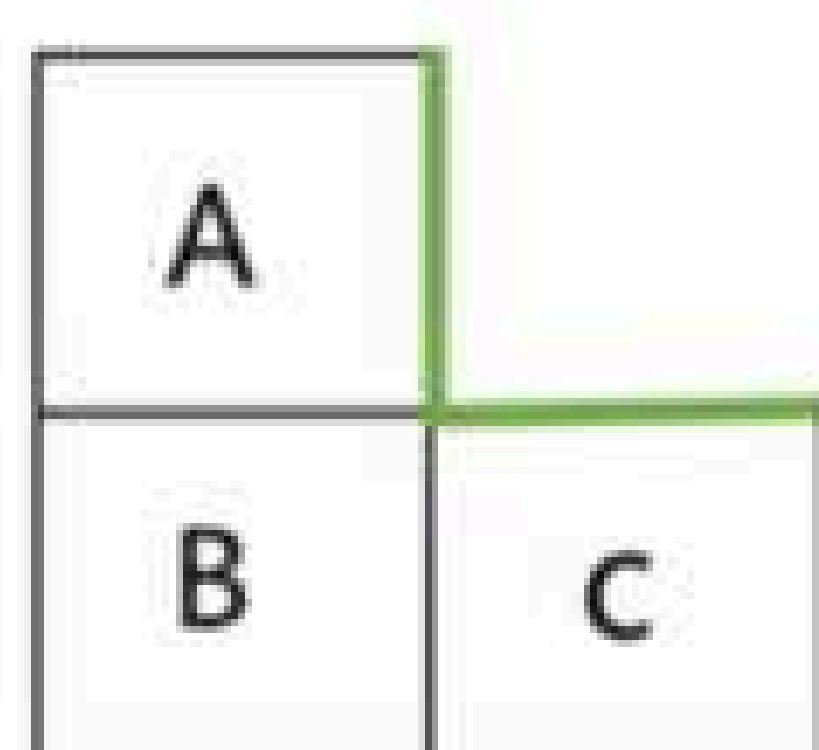
➤ 没有唯一，且三个面很近 → 公共点



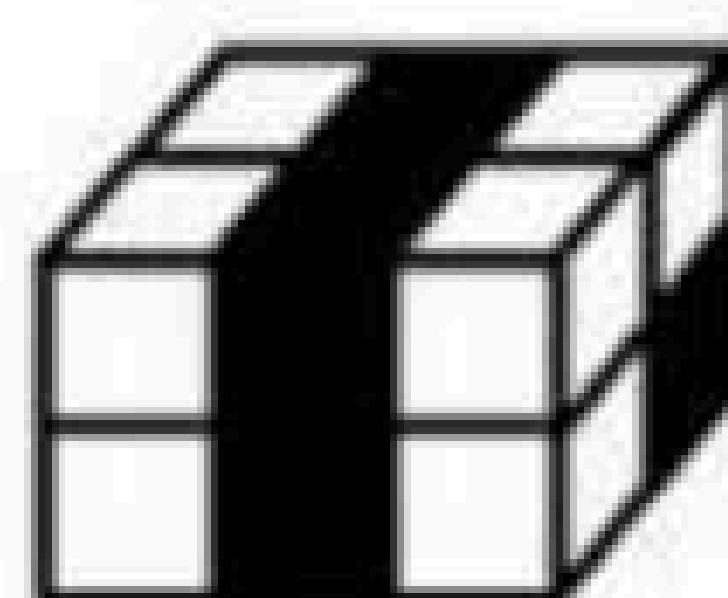
➤ 没有唯一，且三个面很近 → 公共点



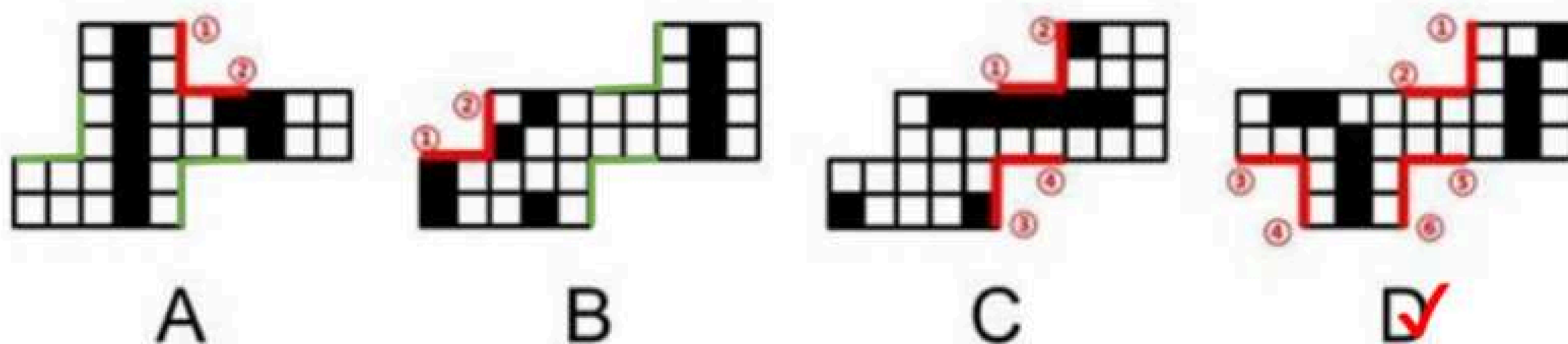
➤ 6个面都一样 → 找“特殊关系”



平面图中构成直角的两条边是同一条边

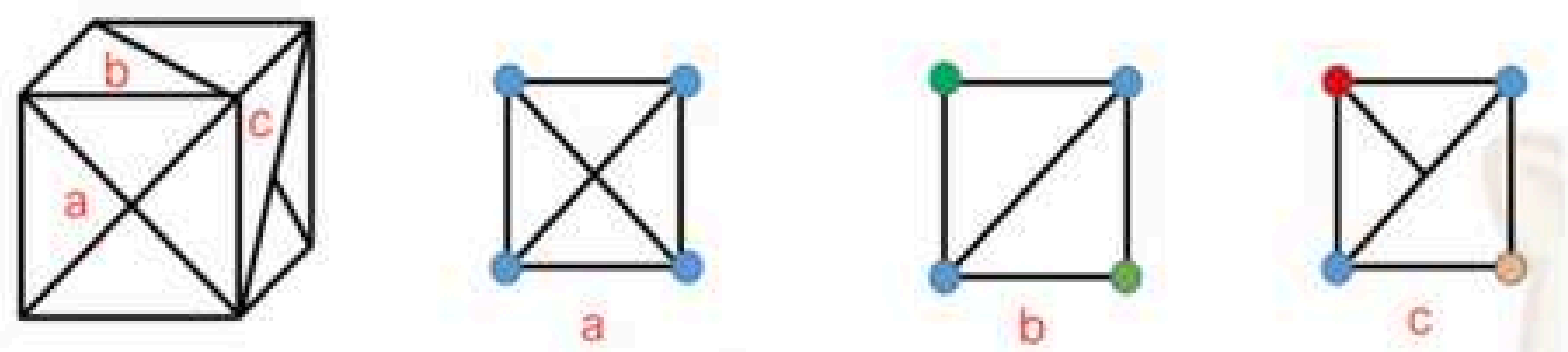


➤ 公共边：两边的颜色保持一致

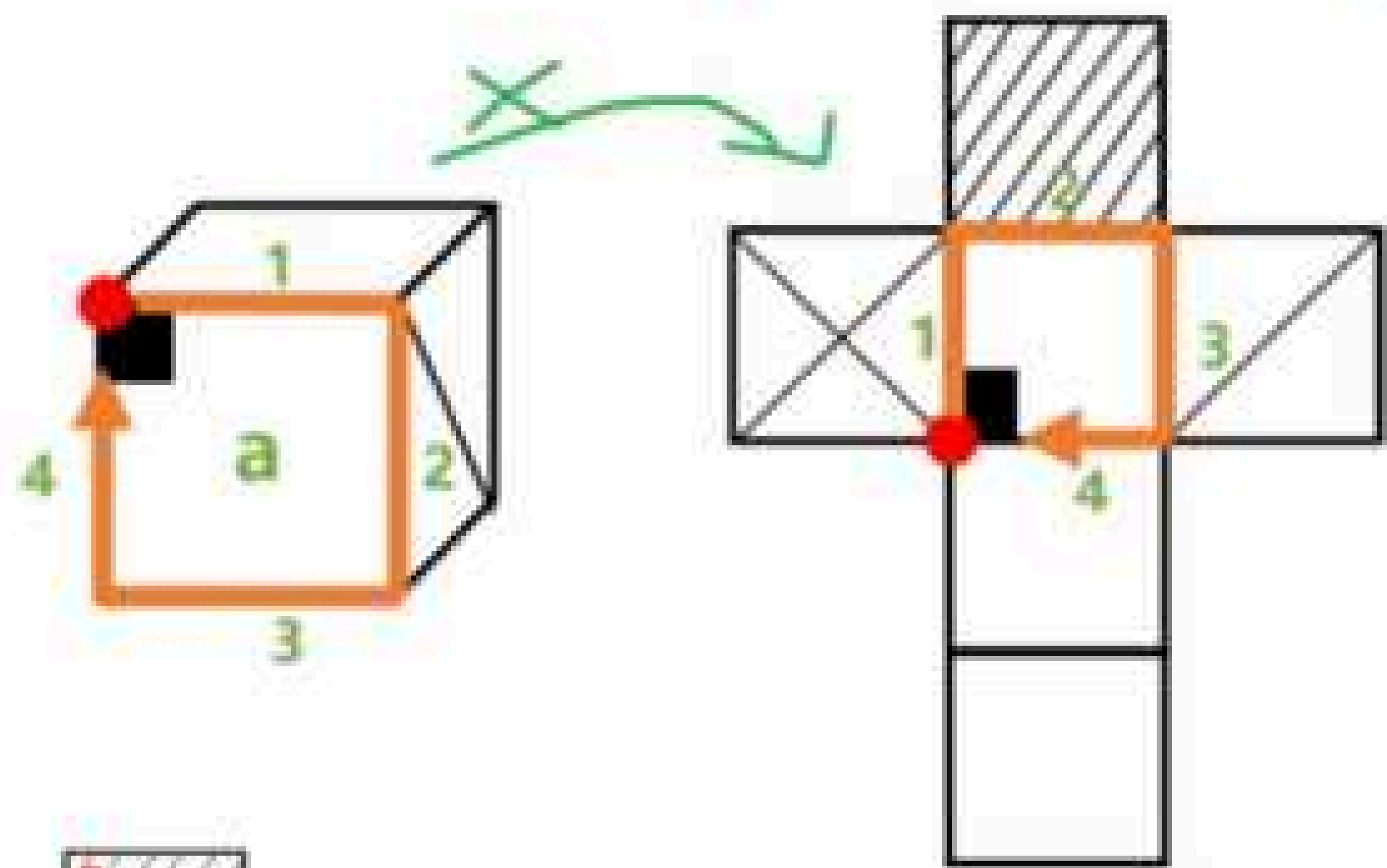


● 画边法 小红书：@贝栗子

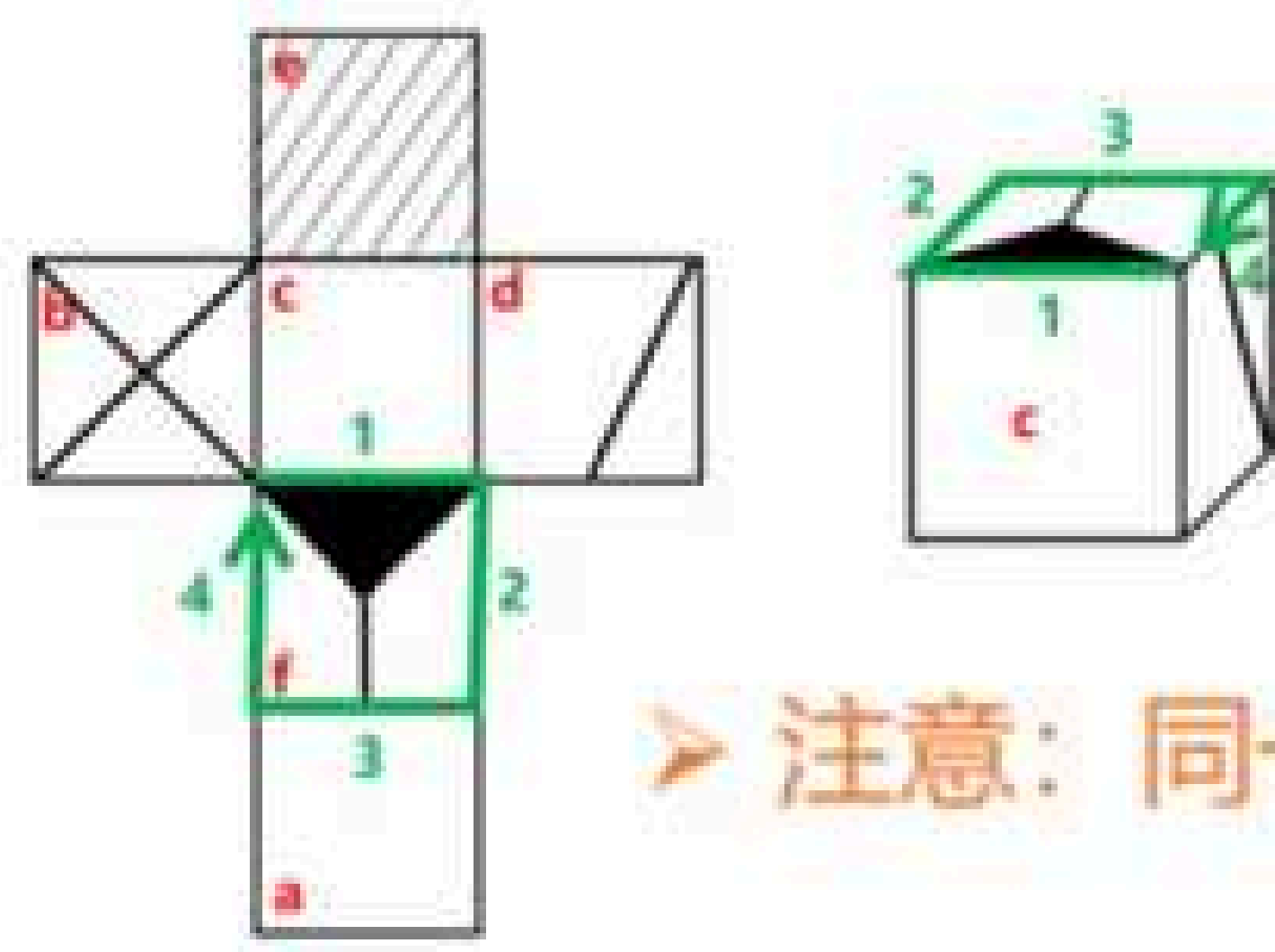
① 结合选项, 找一个唯一点或唯一边



② 顺时针方向描边标号 (描同一个面)

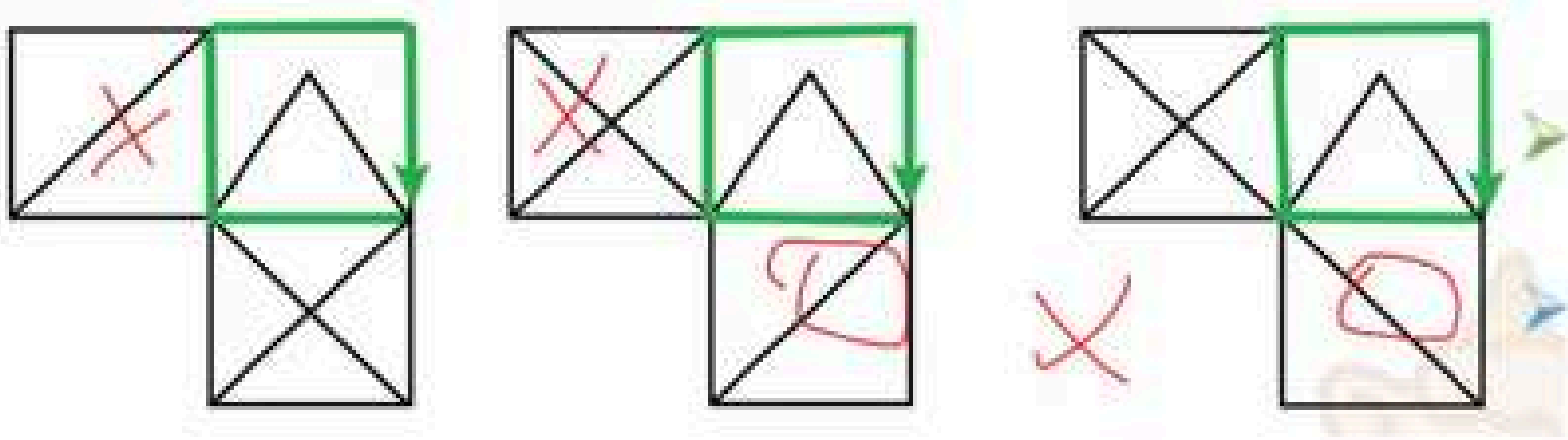


③ 题干与选项对应面不一致 (排除)



➤ 注意: 同一个面、同一个点、同一方向

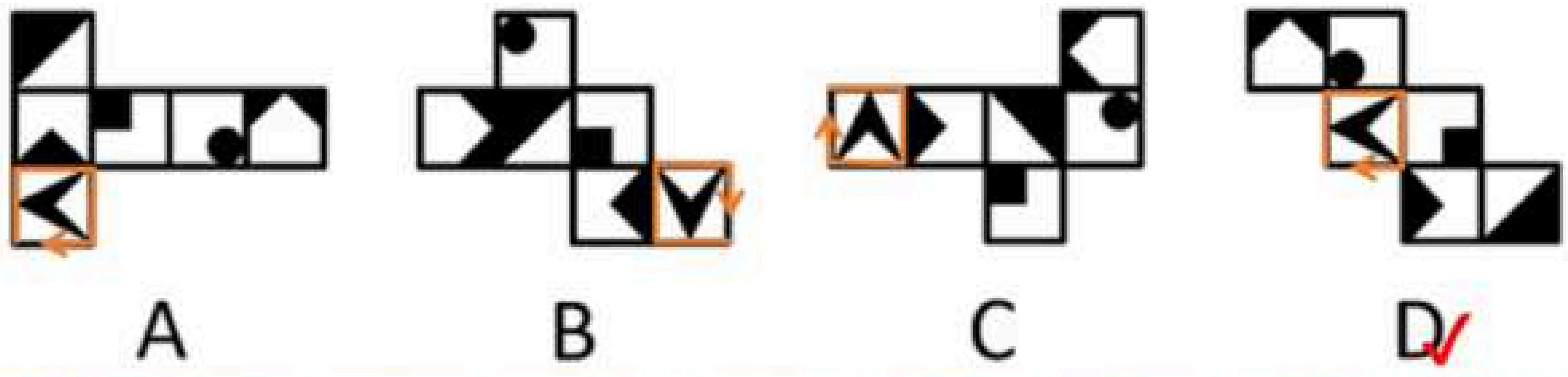
◆ “画边法” 真实测评



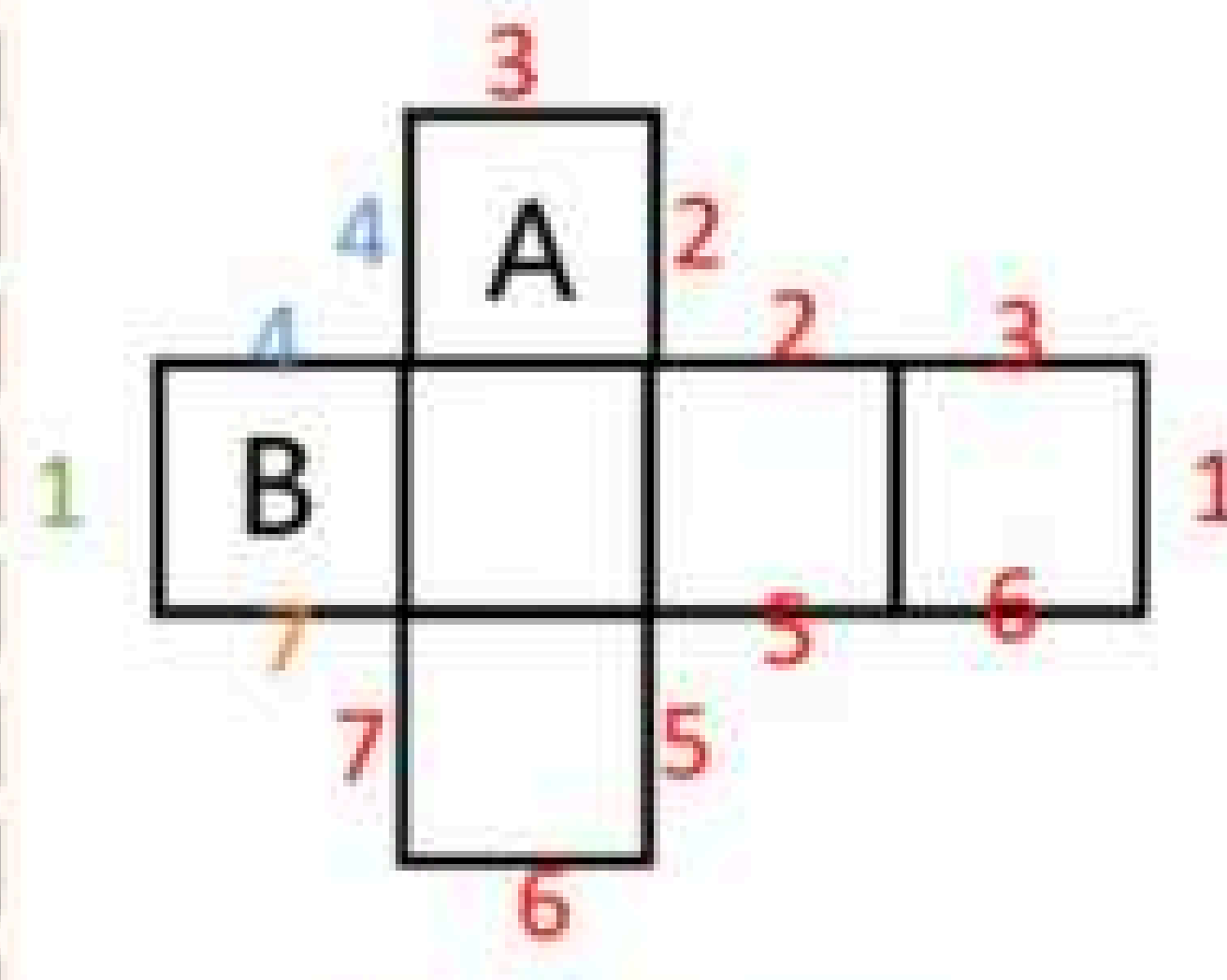
➤ 优点: 能解决方向问题, 细节问题 (既可以看到点, 也可以看边)
➤ 缺点: ① 速度偏慢 ② 左右细节问题需要关注

(25湖北选调-20%) 以下除哪一项外, 均为同一正方体纸盒的外表面展开图?

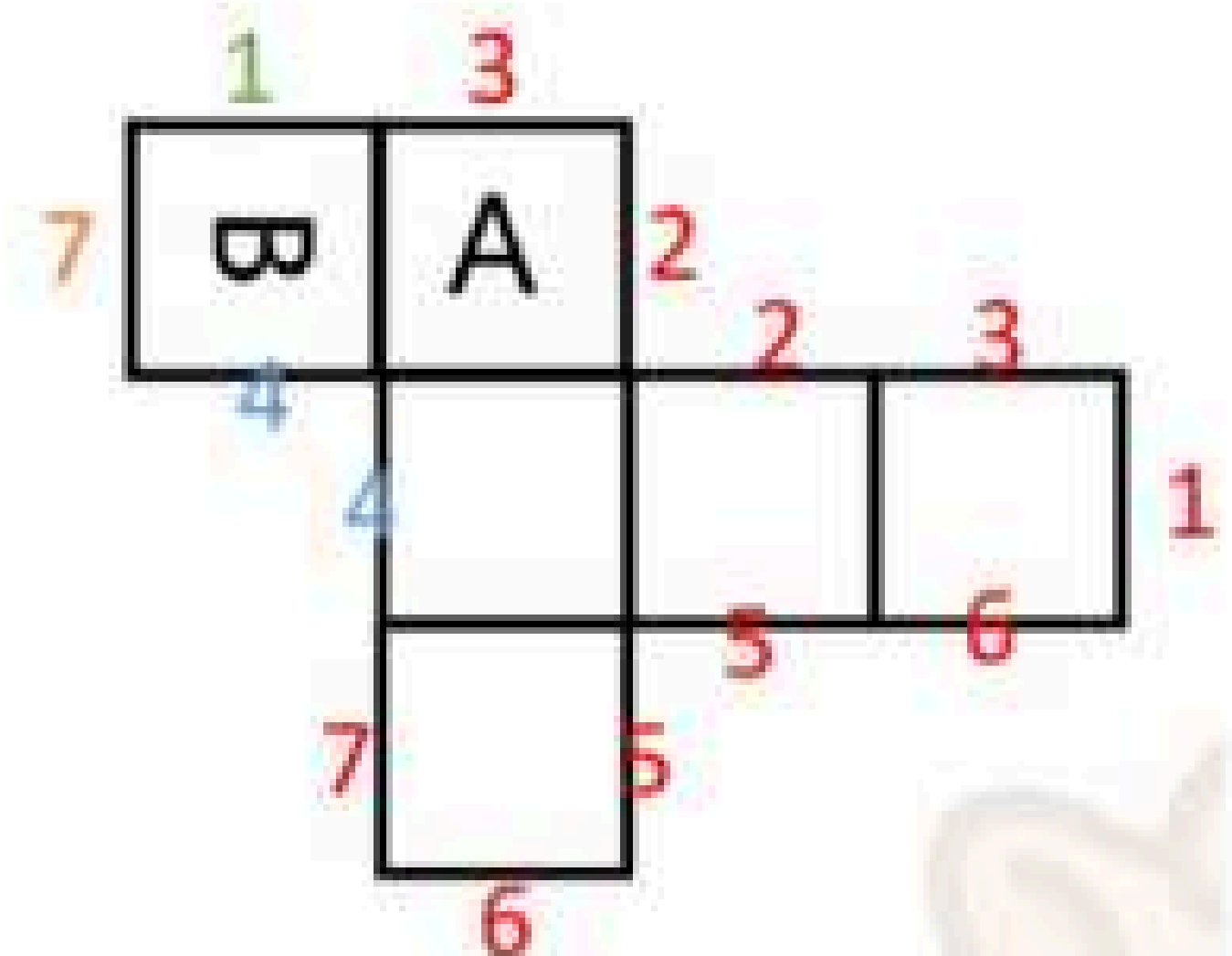
➤ 画边法 (箭头法-2选1)



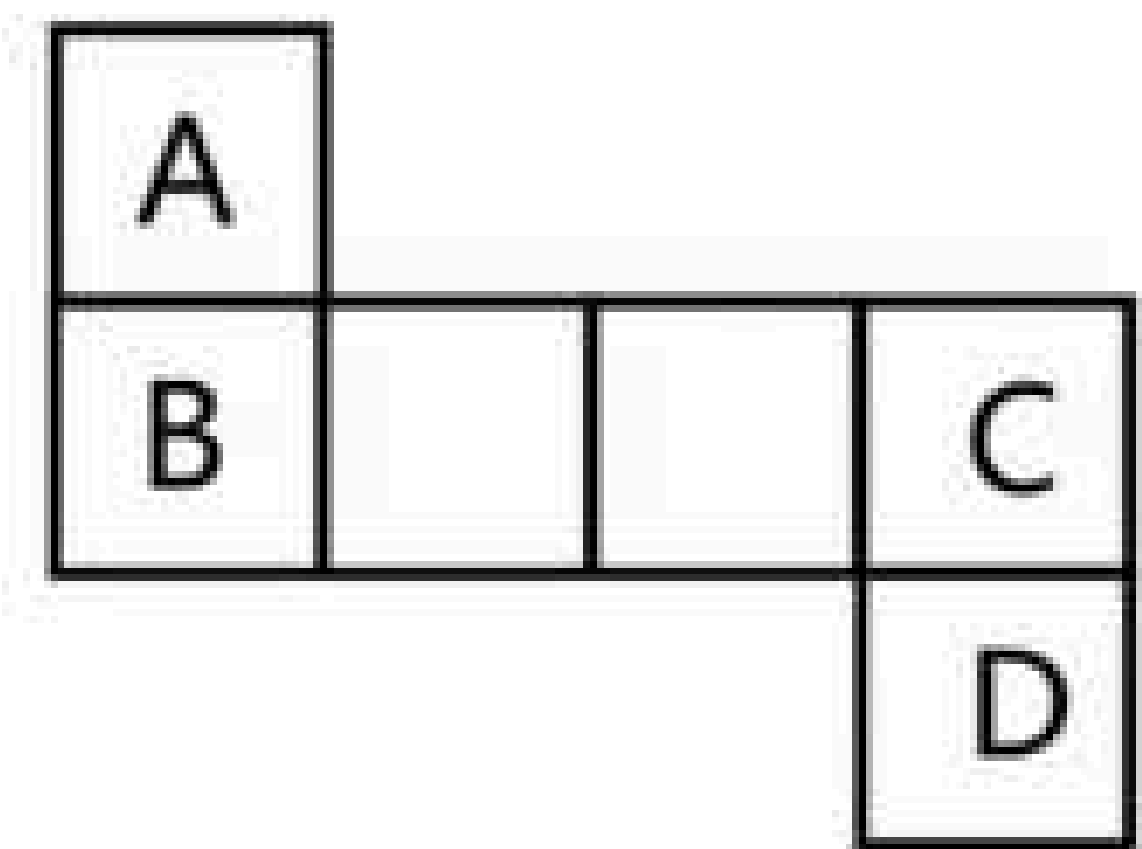
◆ “1-4-1” 变形怎么办?



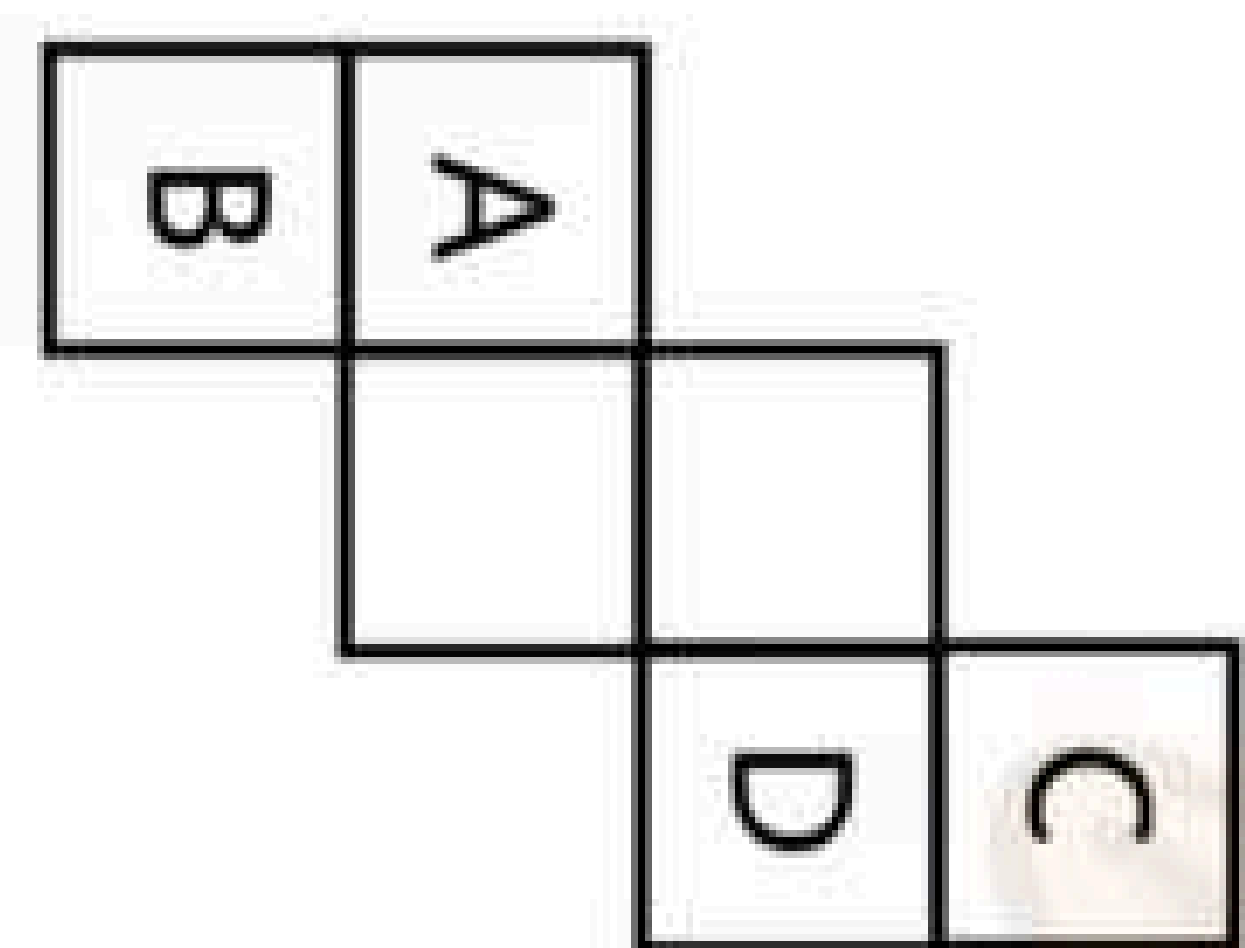
“1-4-1” 模型



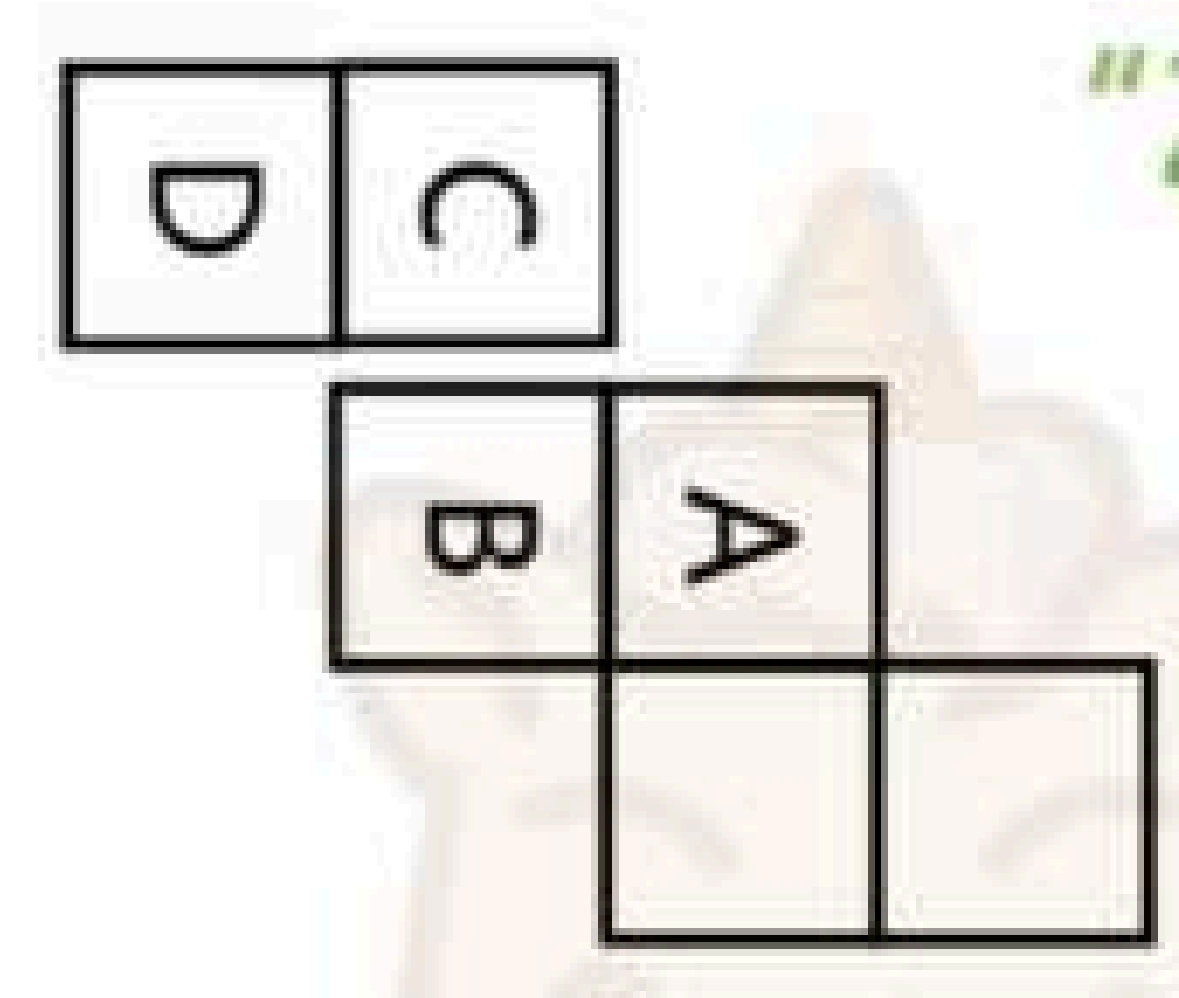
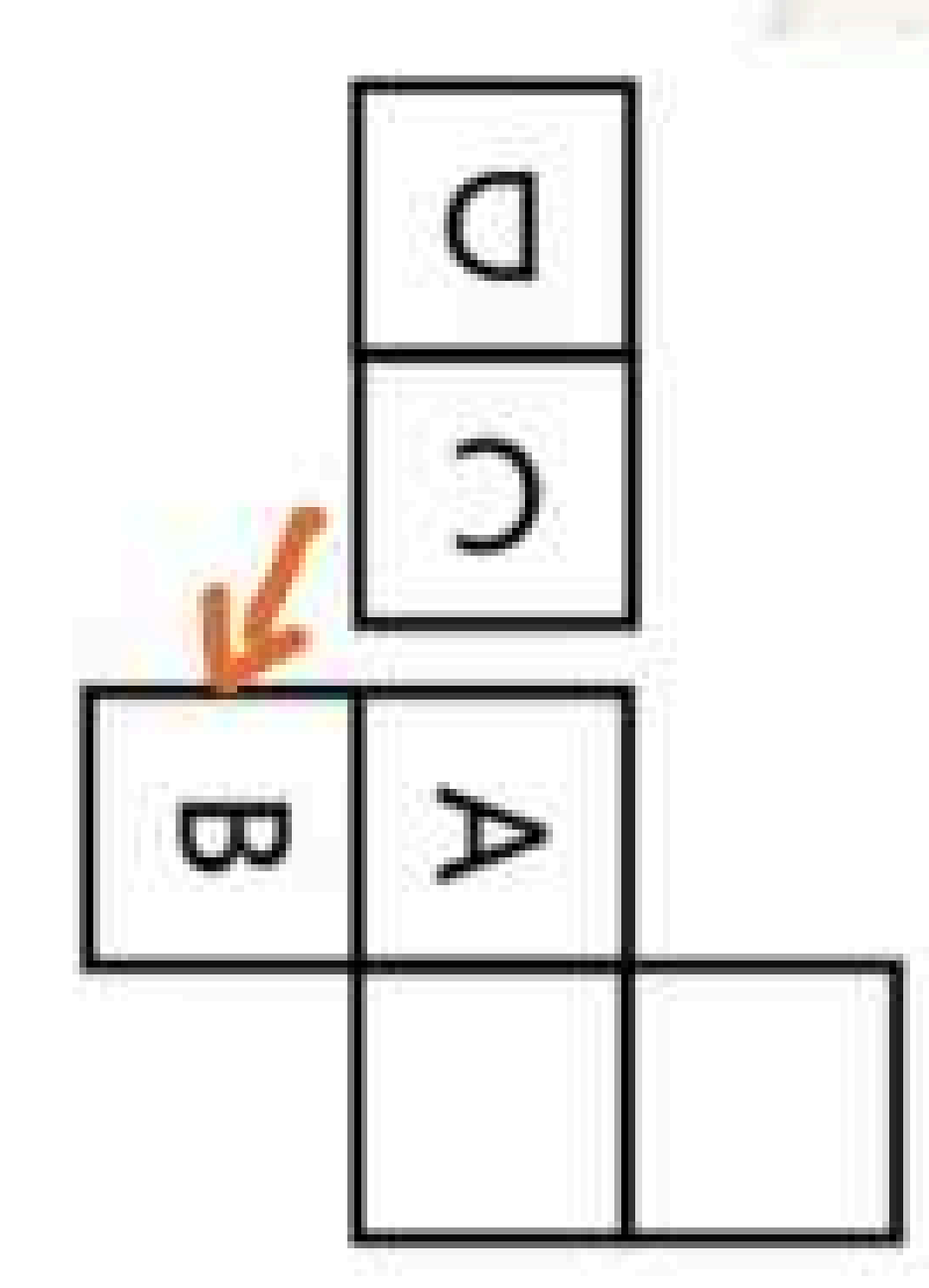
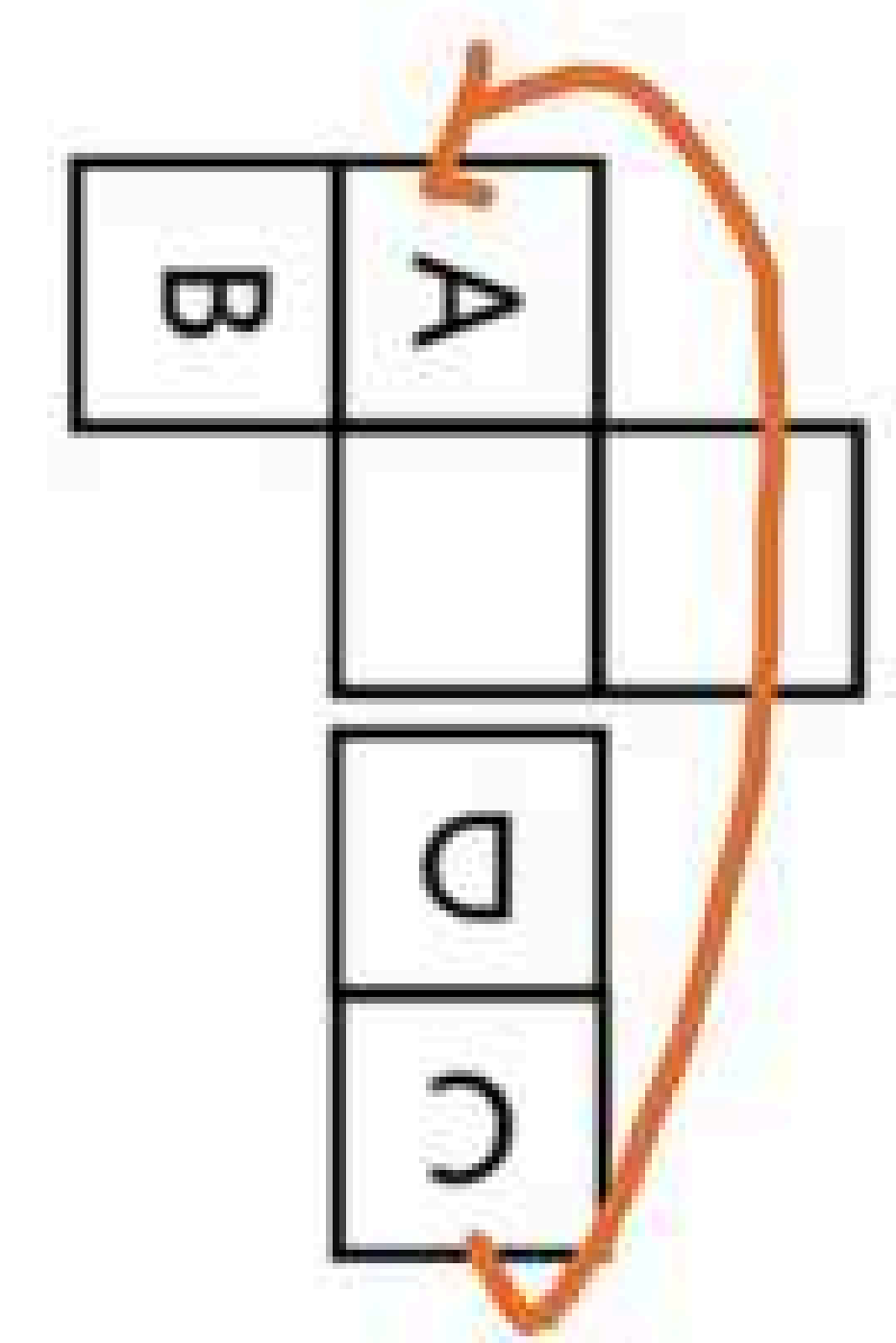
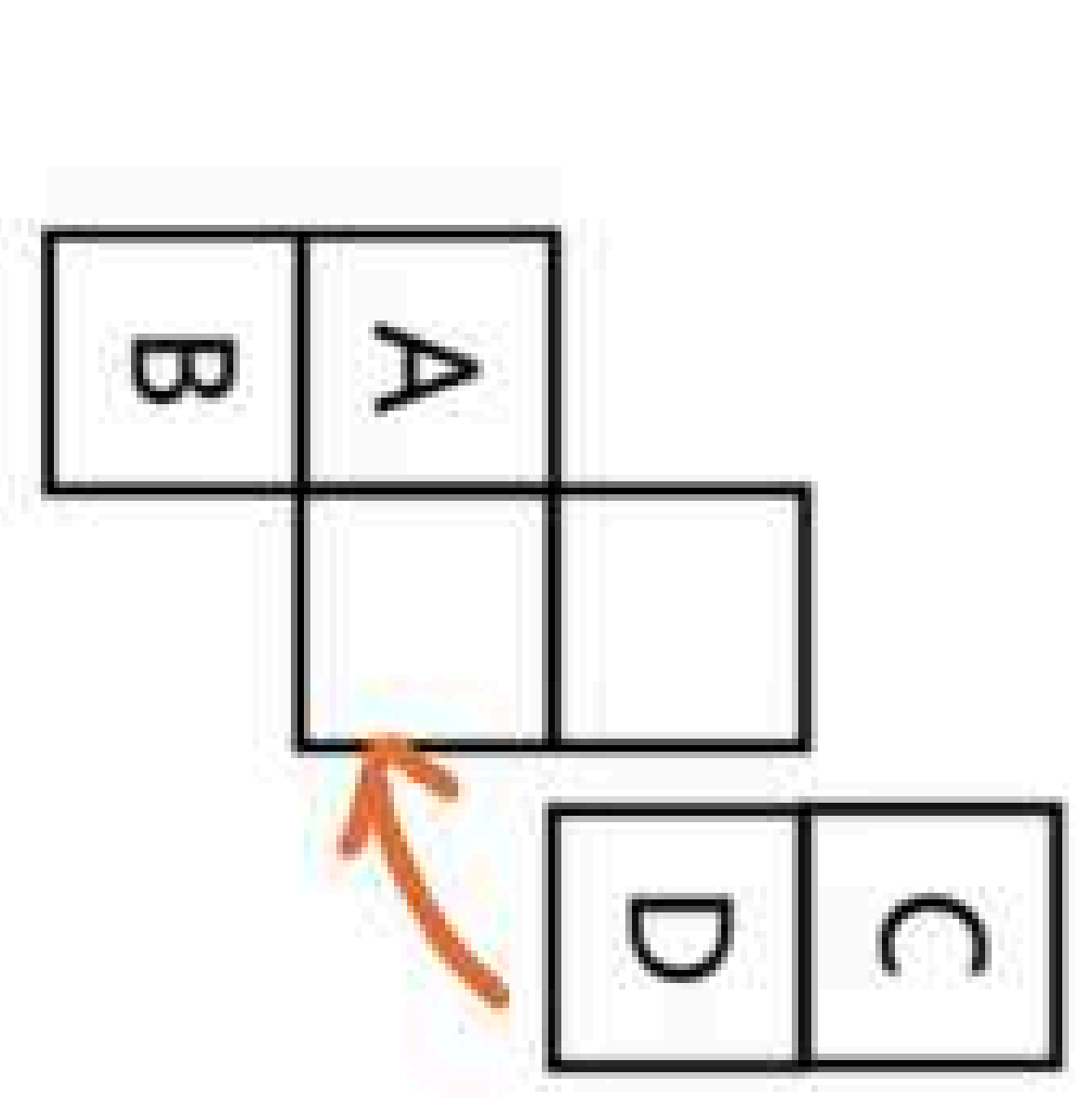
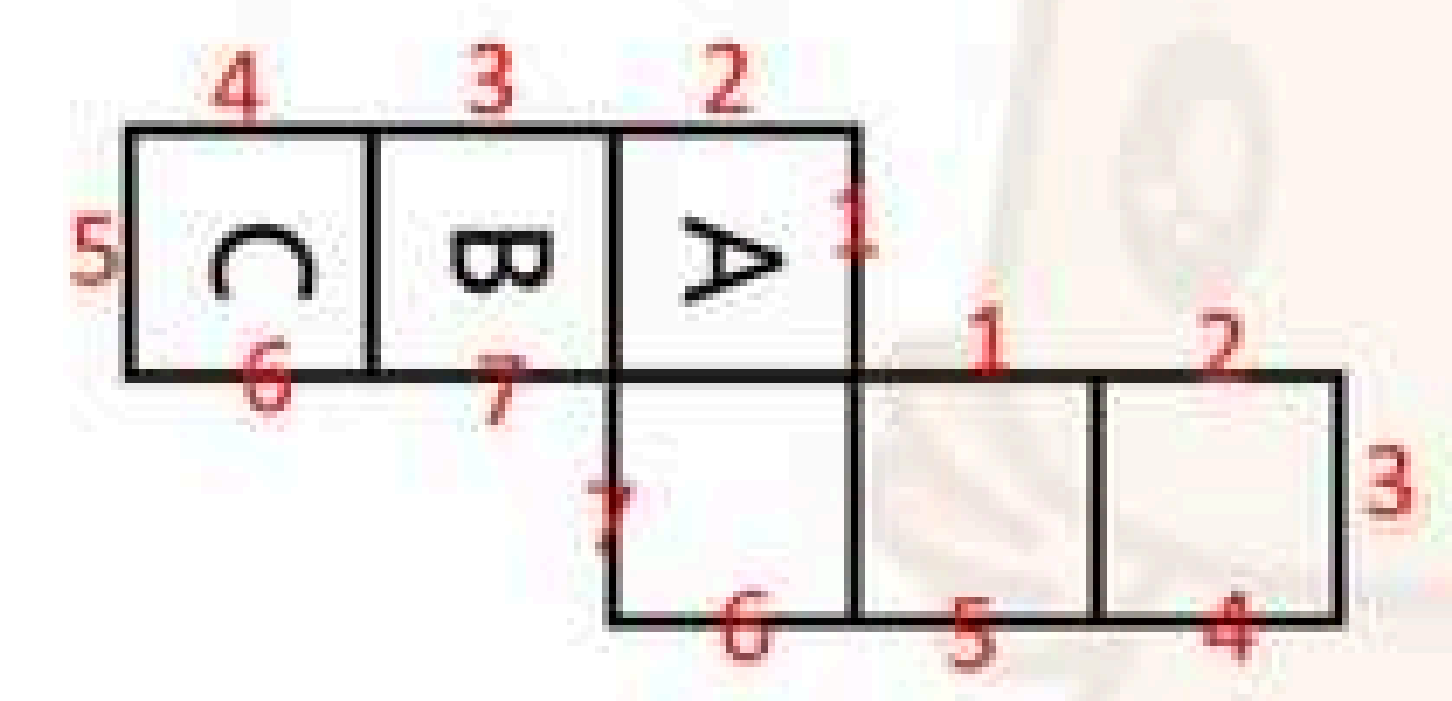
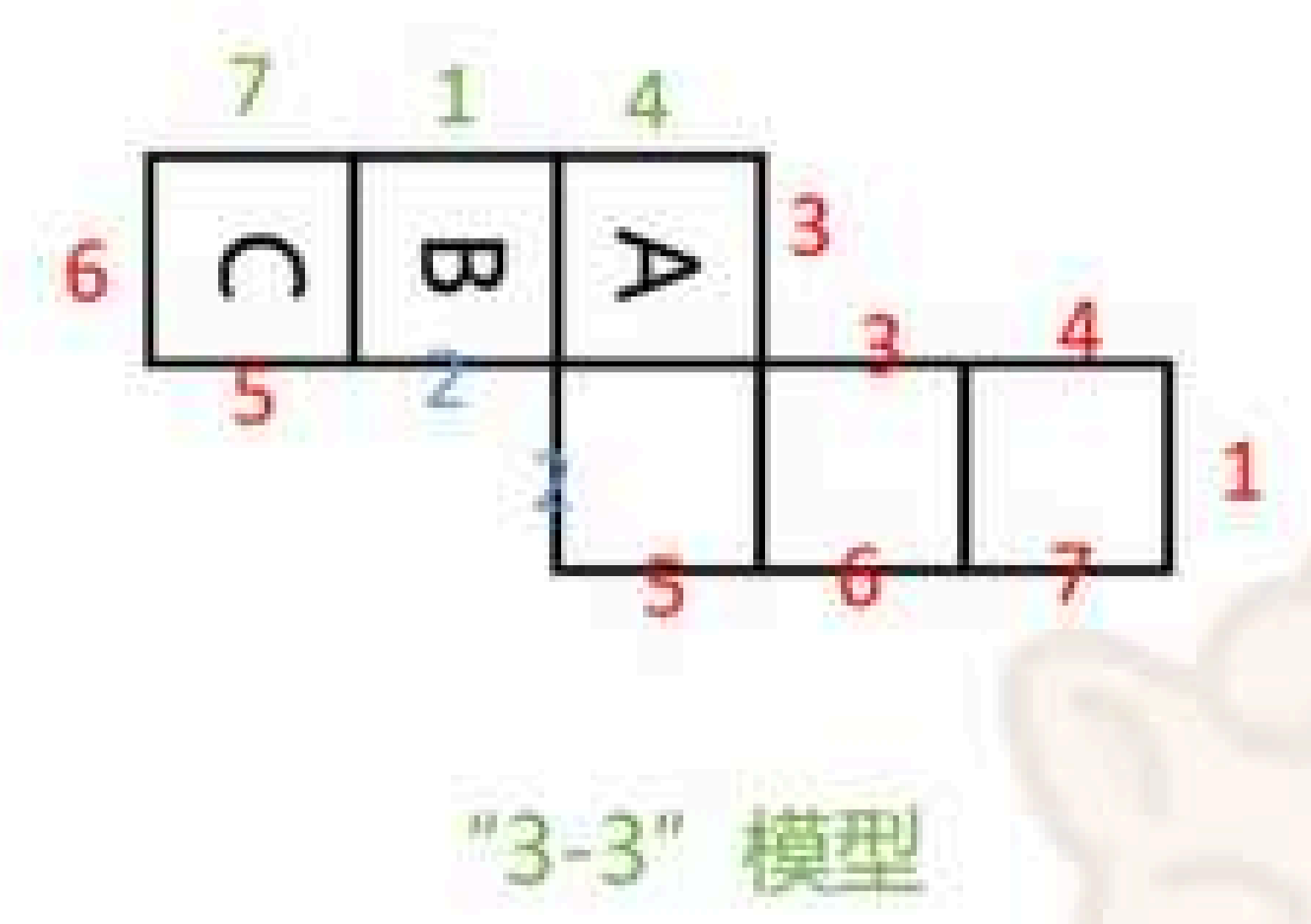
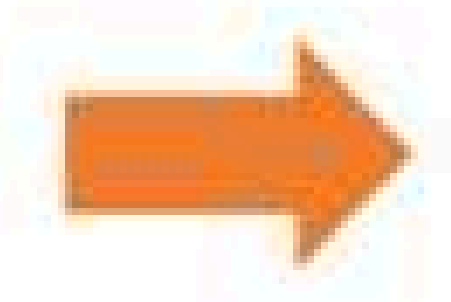
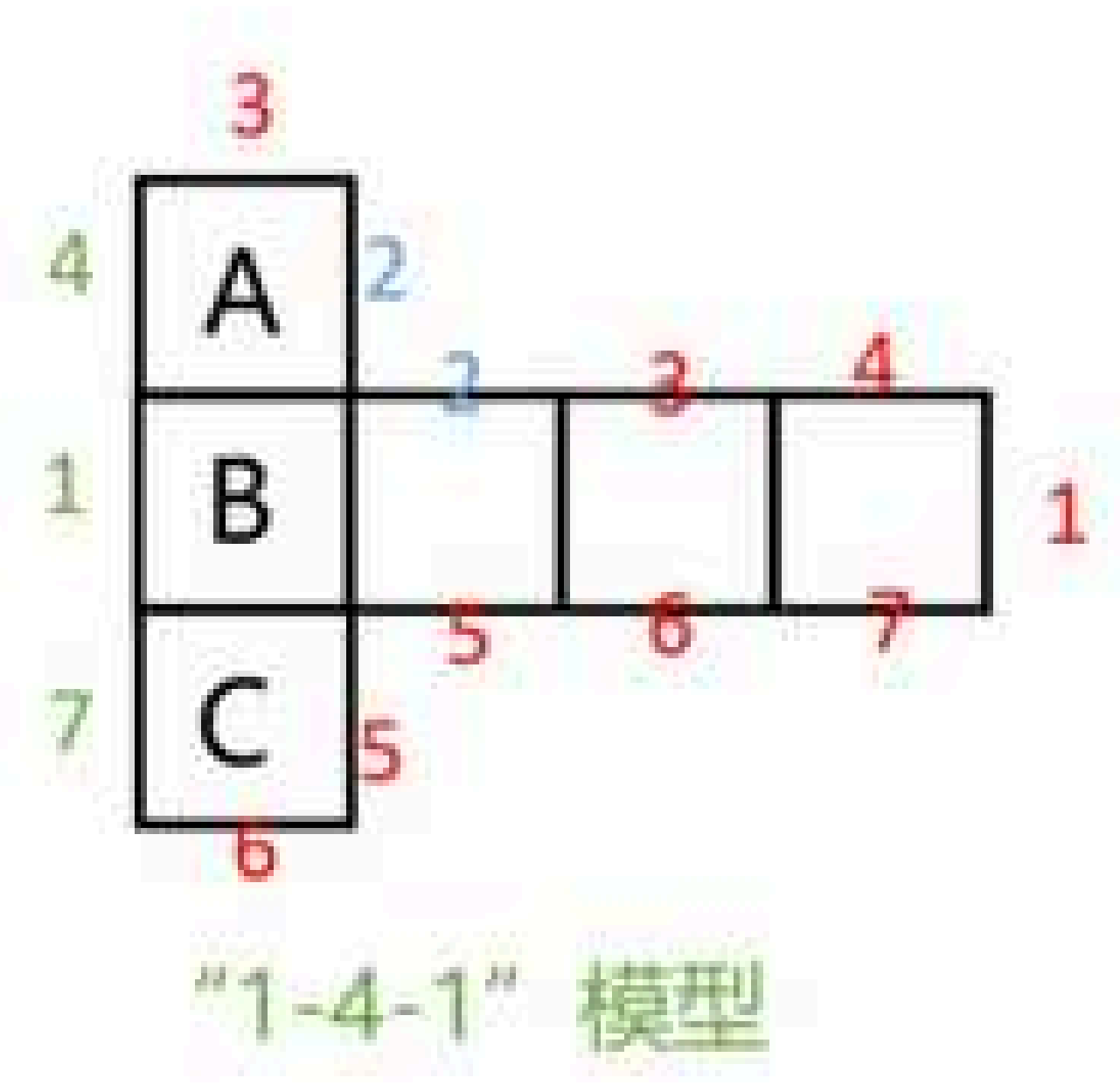
“2-3-1” 模型



“1-4-1” 模型

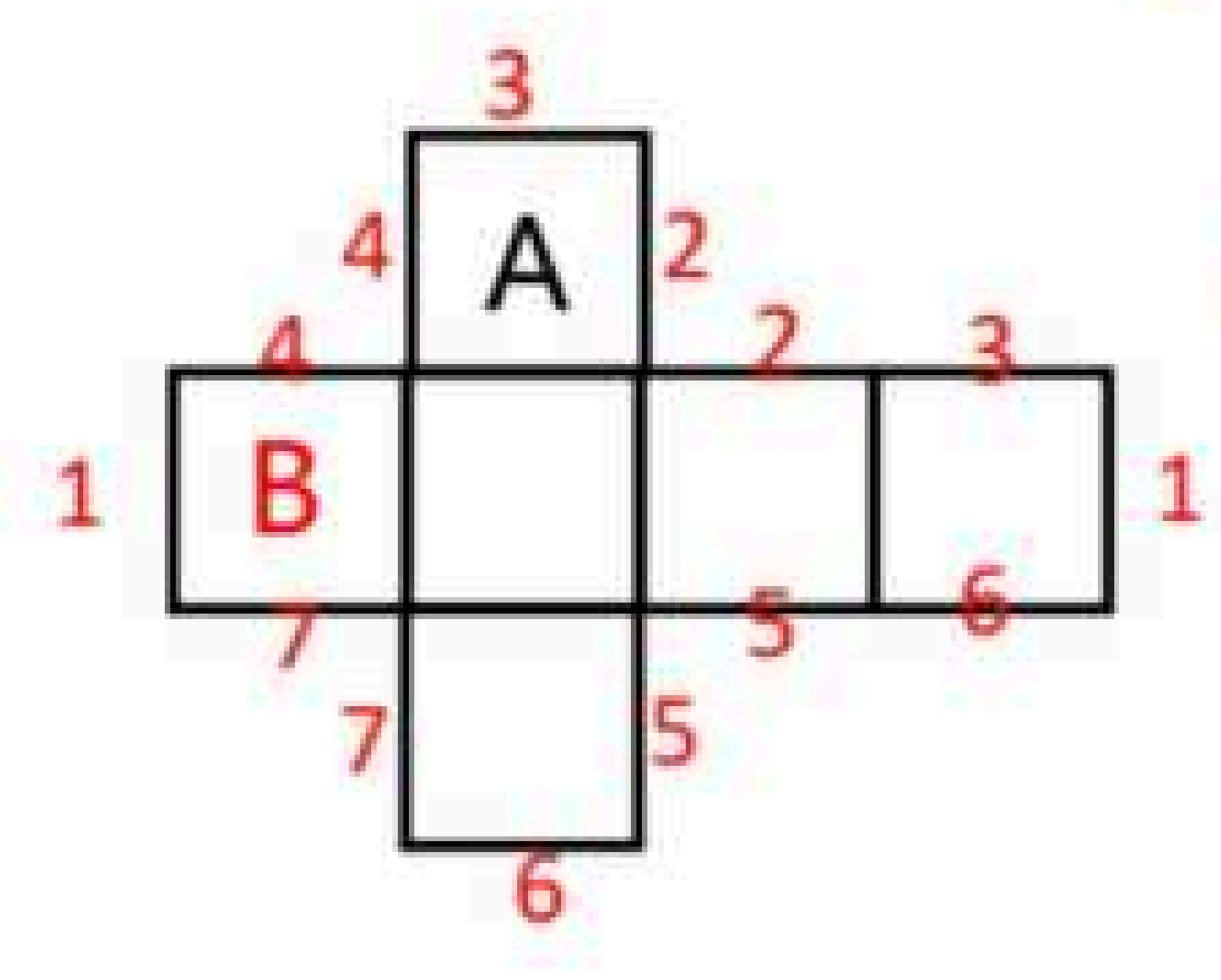


“2-2” 模型

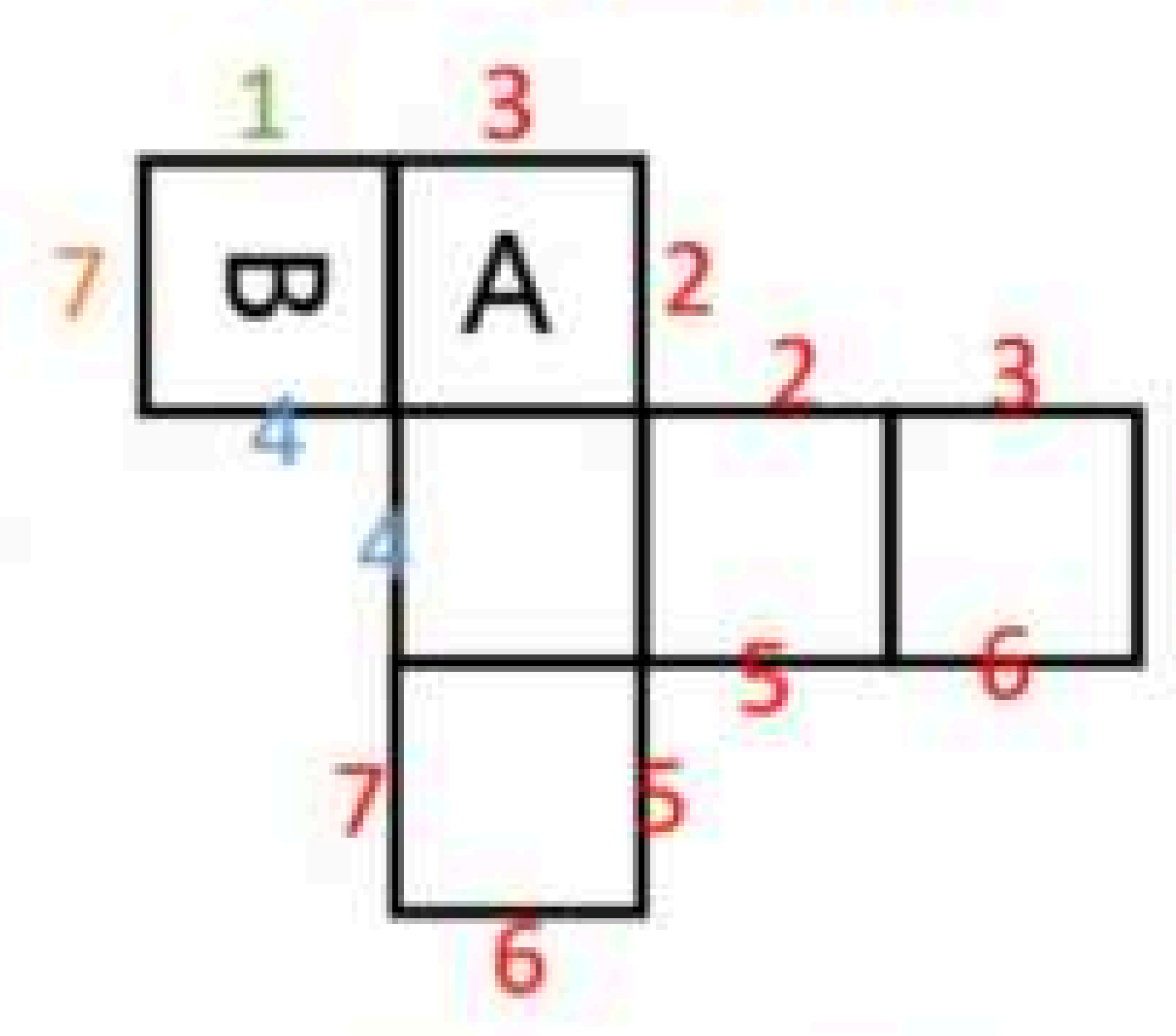


"2-2" 模型

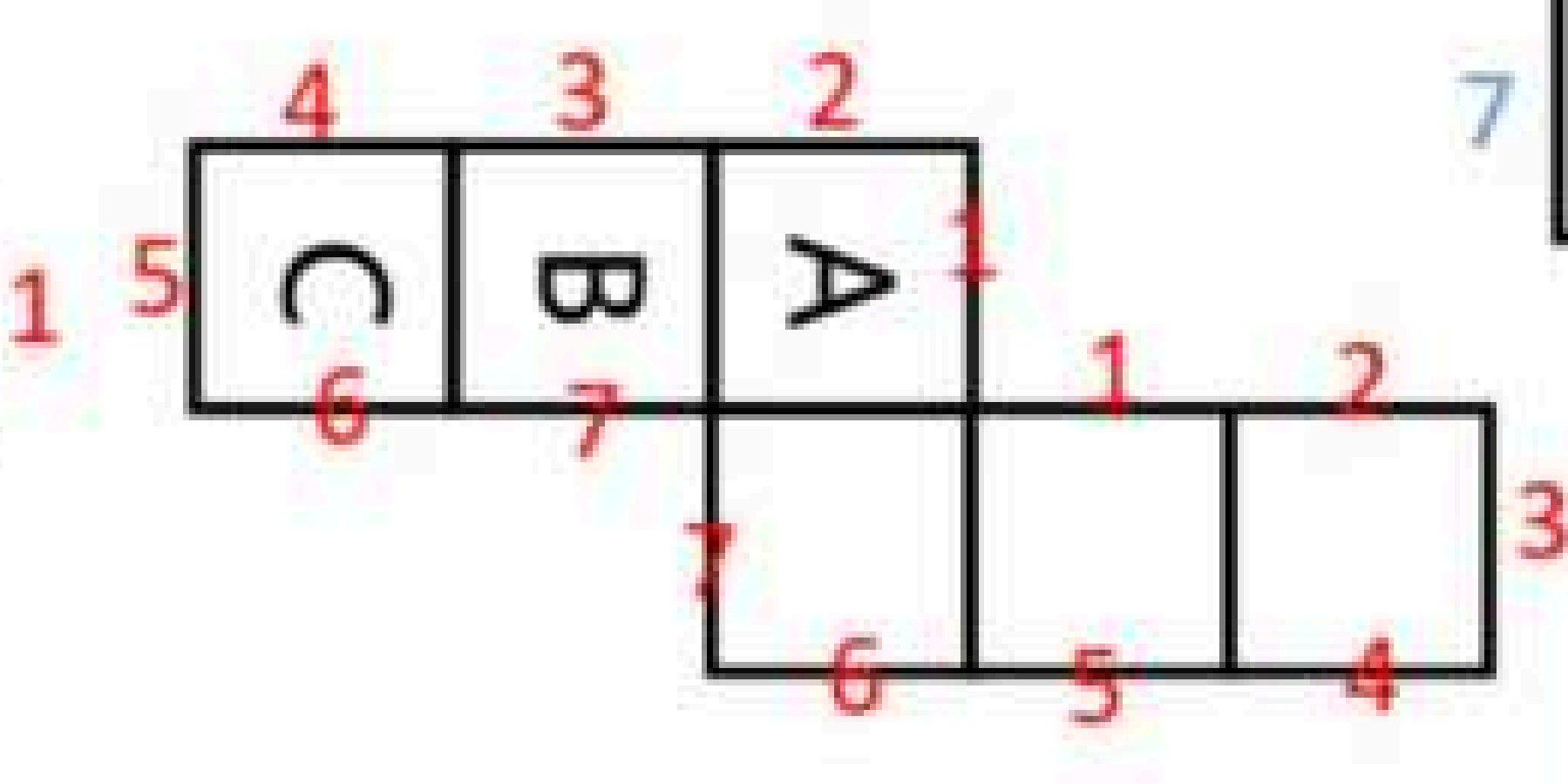
◆ "六面体" 四个基础模型



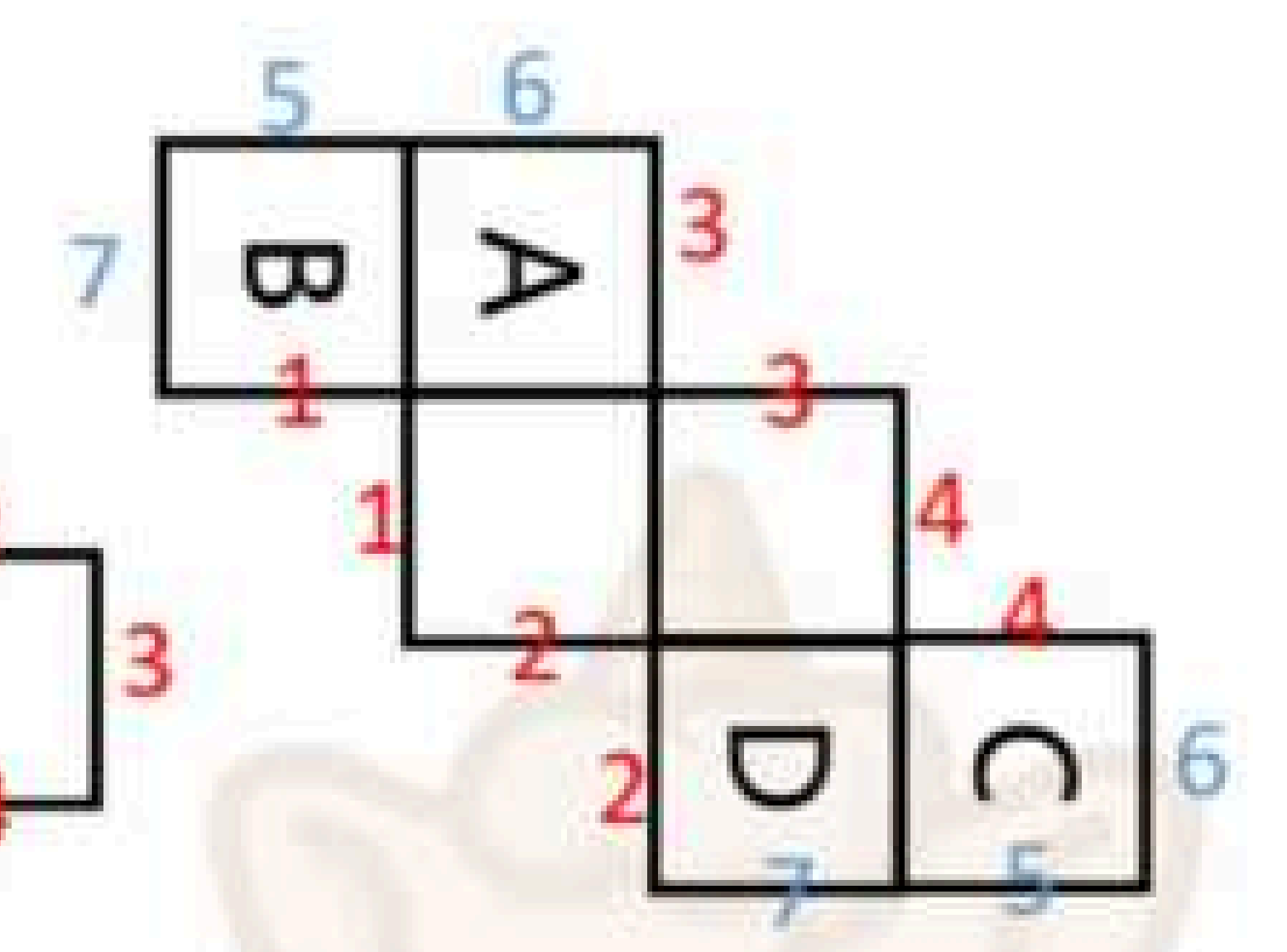
"1-4-1" 模型



"2-3-1" 模型



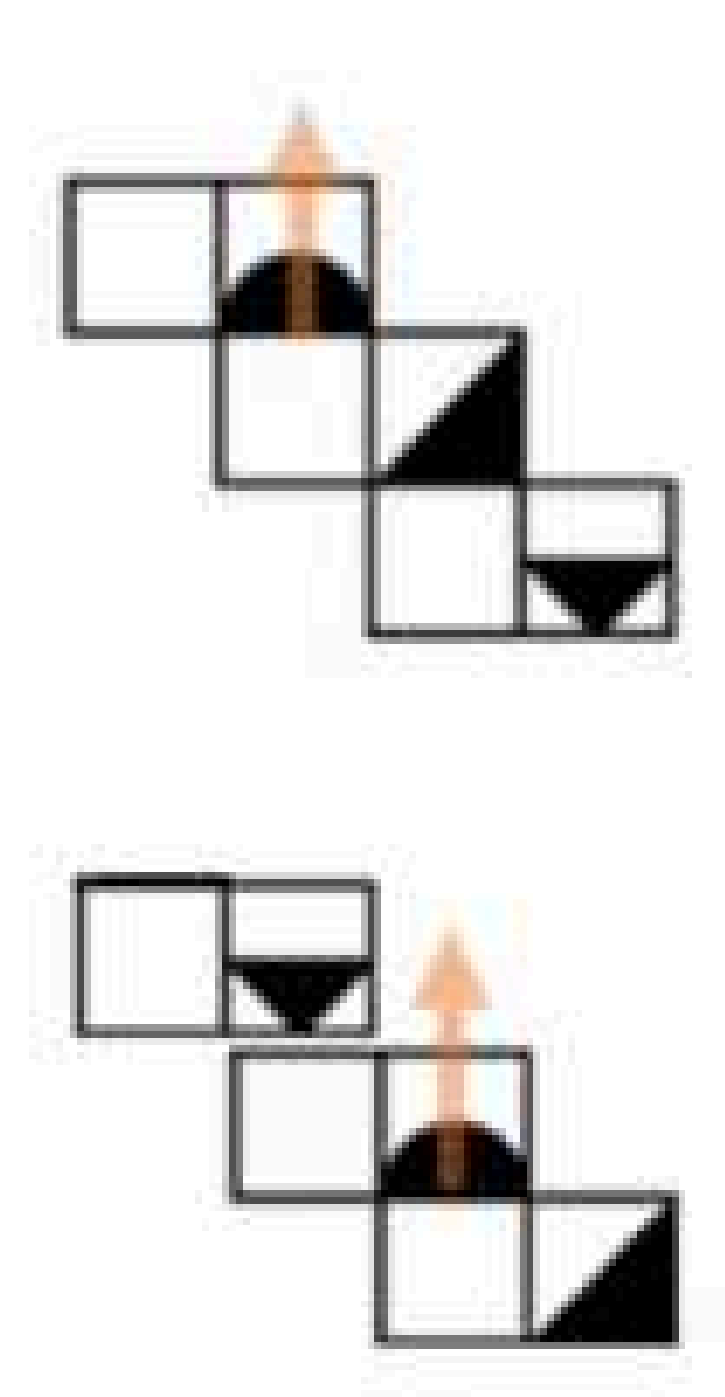
"3-3" 模型



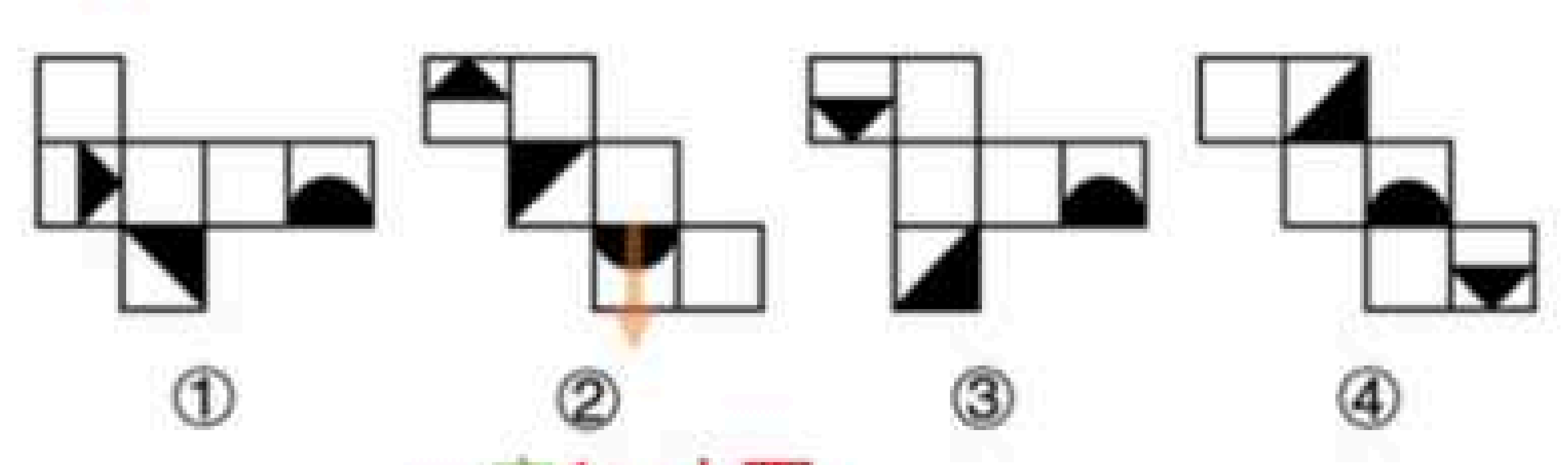
"2-2" 模型

16. (25联考-35%) 左下图为两个正方体组合而成的长方体，这两个正方体的外表面展开图分别可能是：

➢ 箭头法 (主) + 公共边 (辅)

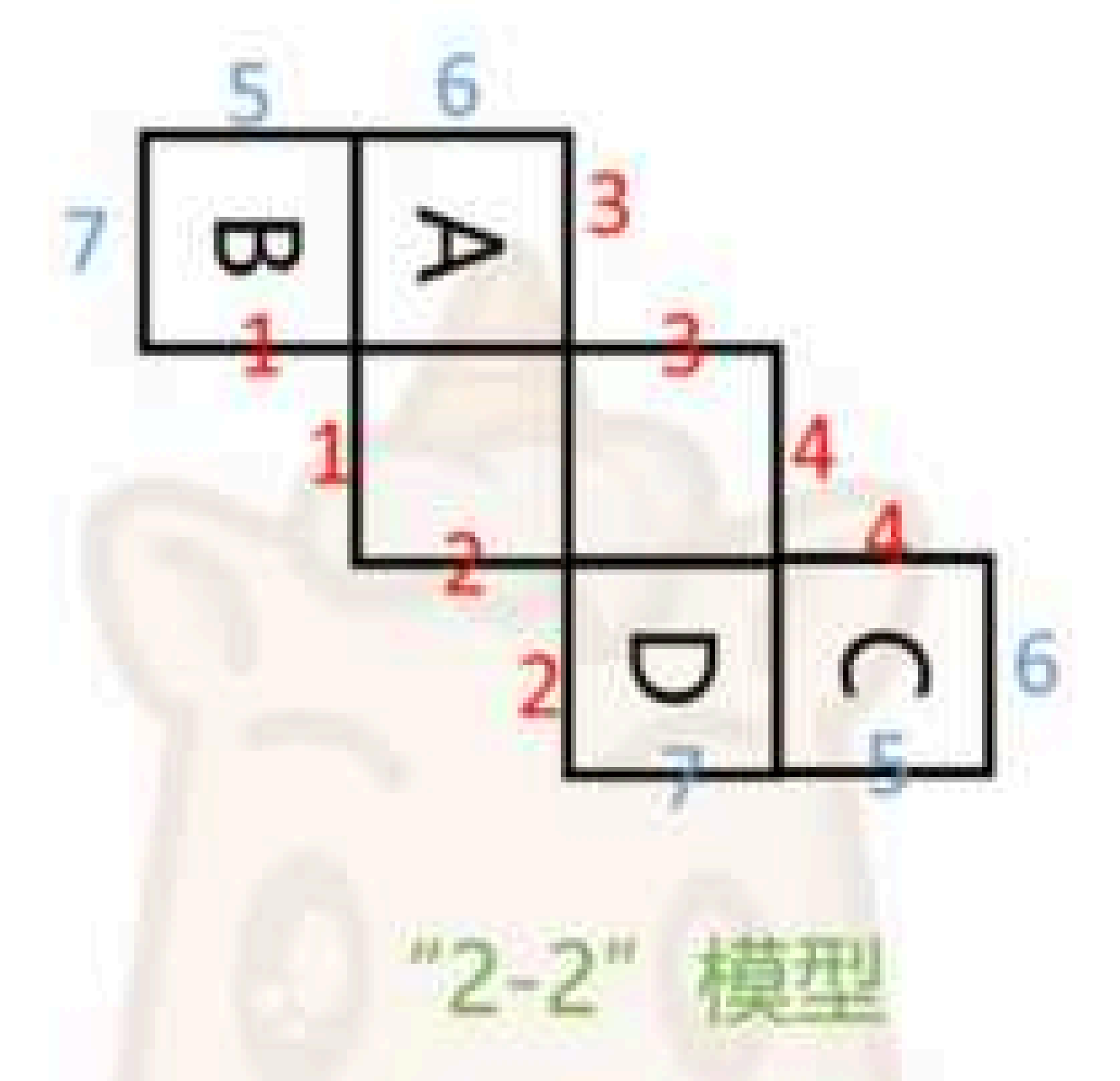


1: 上面 2: 右边



一定1: 上面

- A. ①和② B. ③和④ C. ①和④ D. ②和③



"2-2" 模型

2.四面体

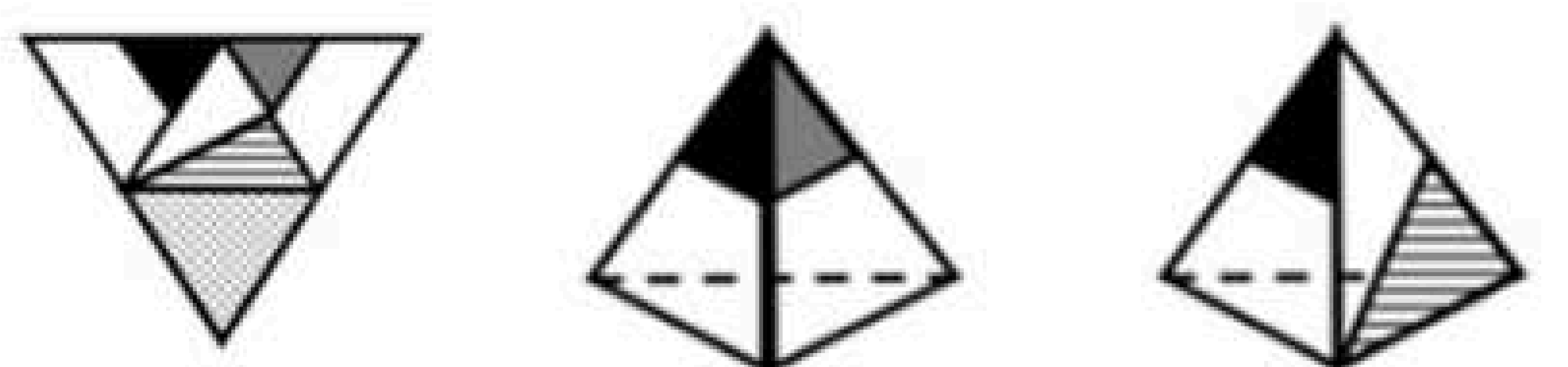
【答题思路】

第一步：有“**唯一边或点**”，优先用“**箭头法**”解题（备选“**画边法**”）

第二步：没有“**唯一边或点**”，优先用“**公共边**”

● 箭头法

◆如何用“箭头法”解决四面体



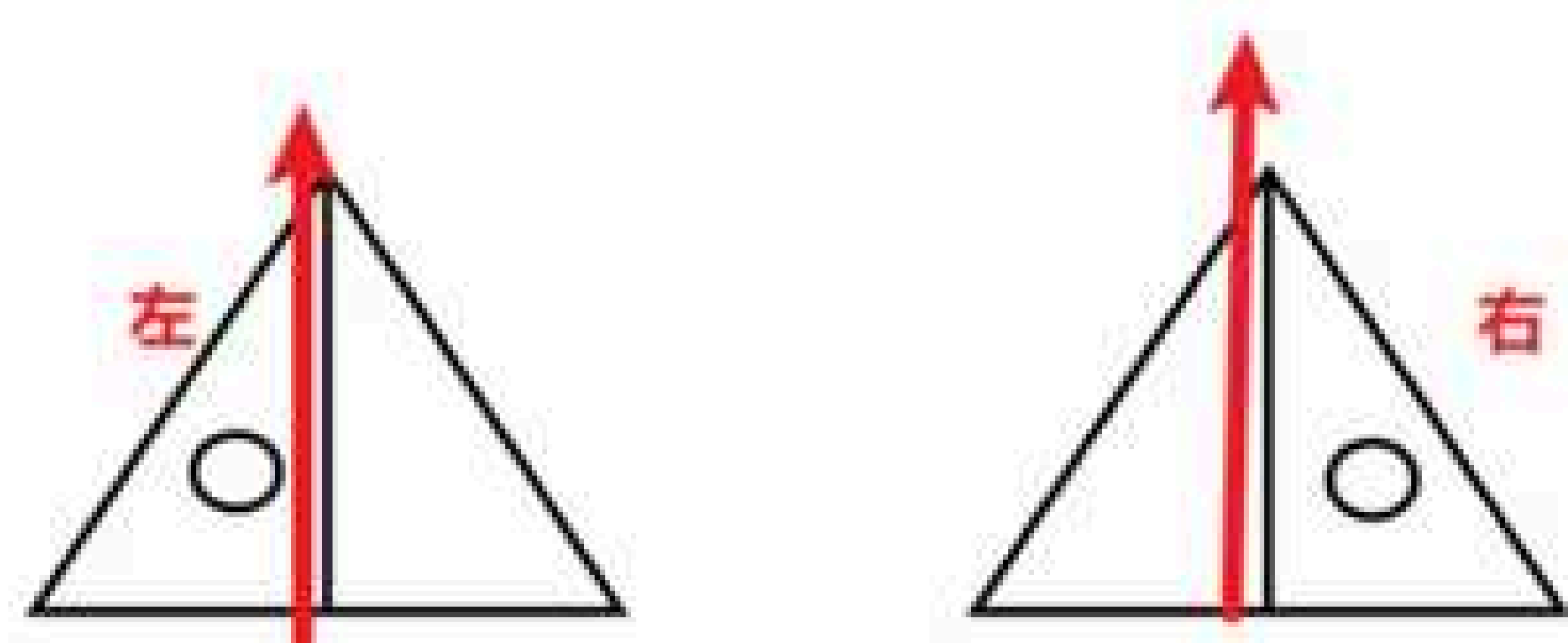
➤ 口诀（找唯一，定方向）

①结合选项，找一个**唯一点或唯一边**

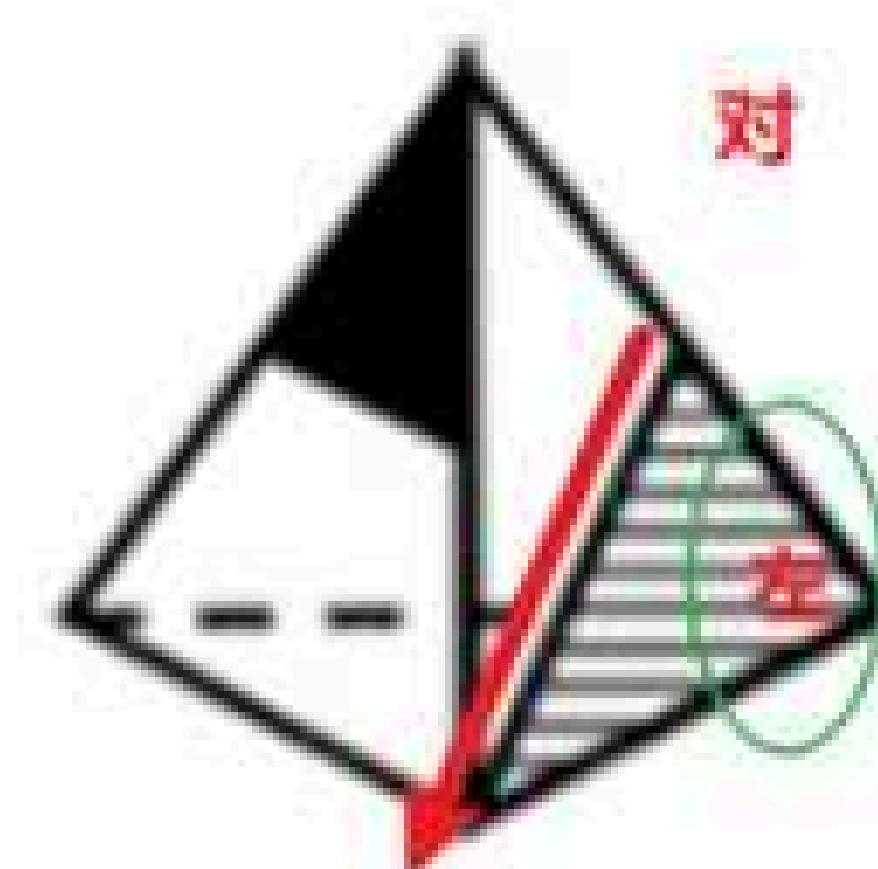
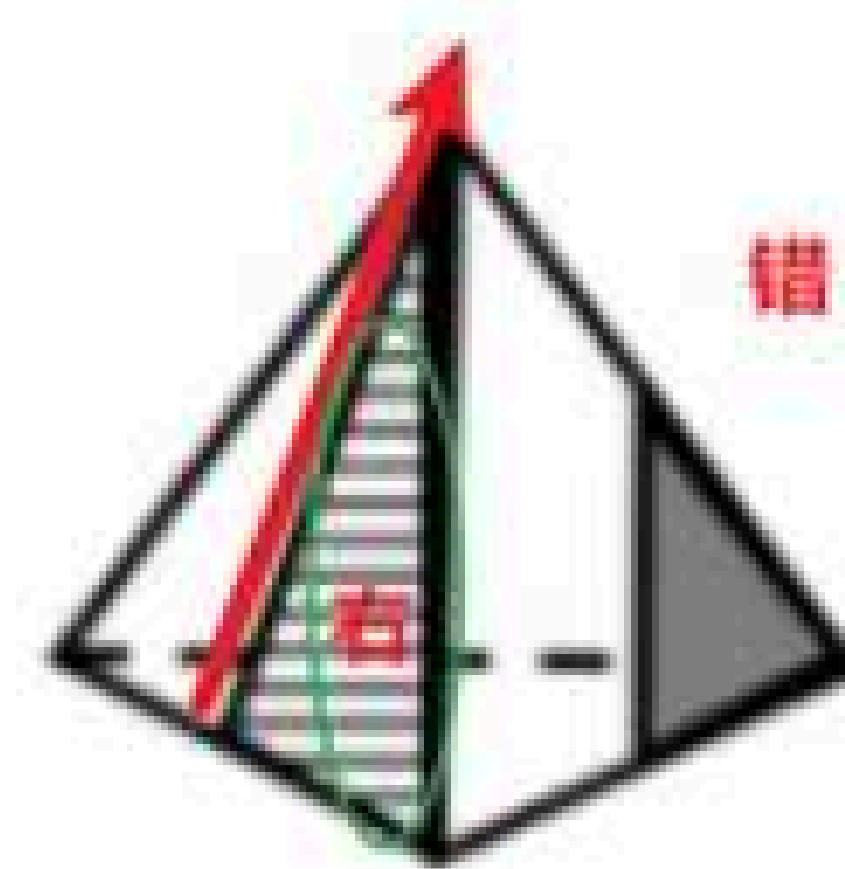
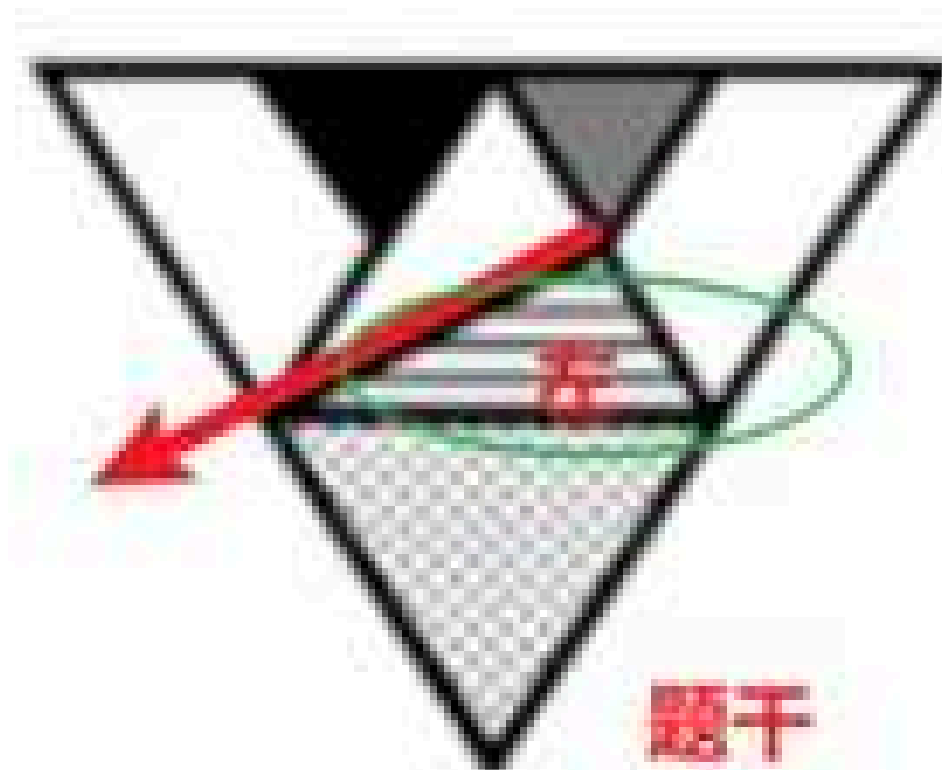
②以**唯一点或唯一边**，作为参照物，画出箭头方向

◆如何区分题干和选项的“左右混淆”

小红书：@贝栗子



◆用箭头法解决 → 左右混淆



● 画边法

◆如何用“画边法”解决四面体



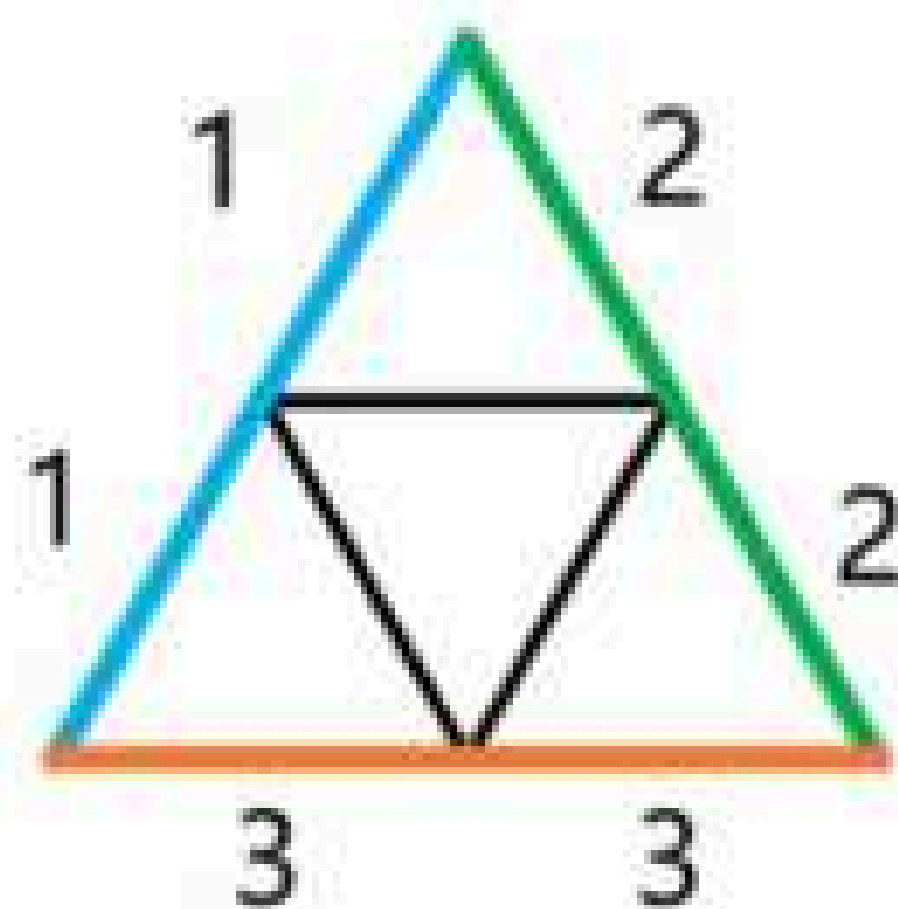
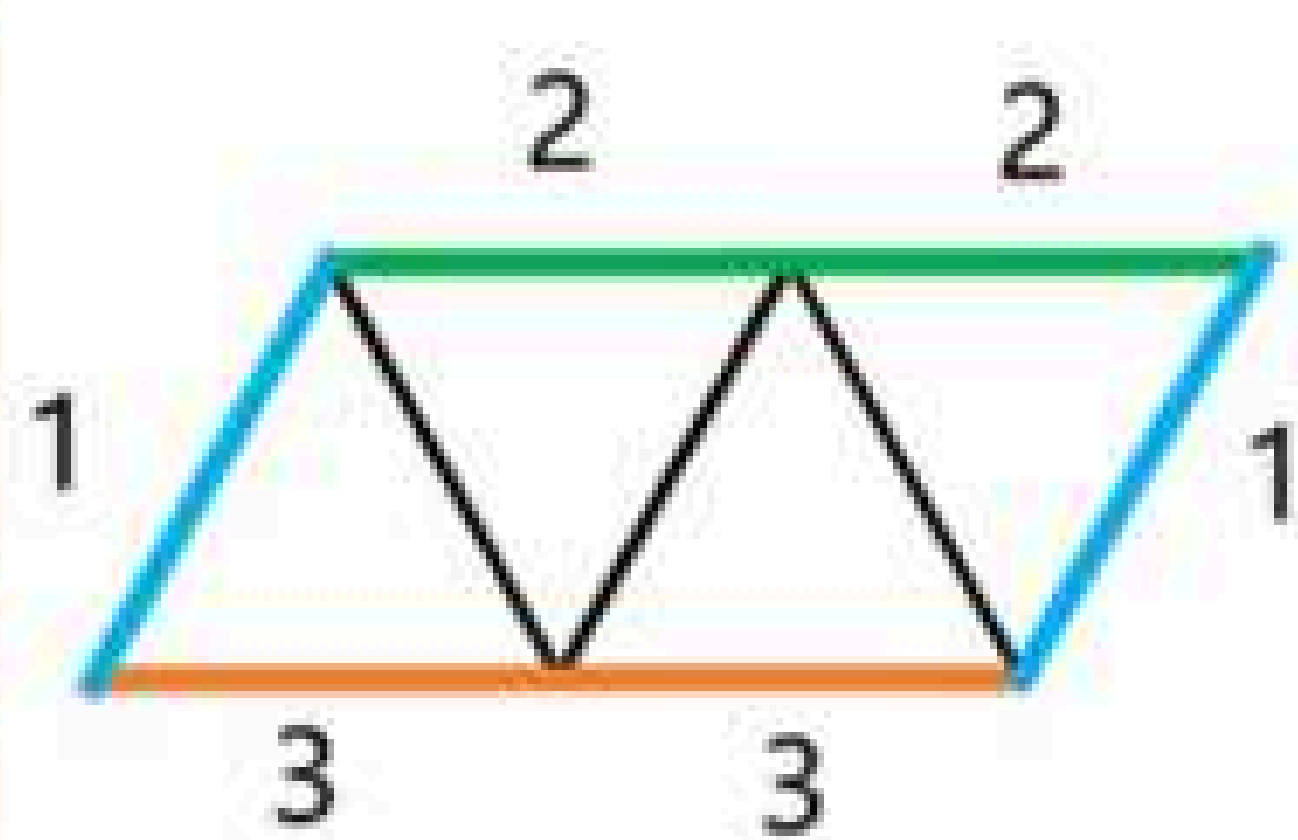
①结合选项，找一个**唯一点或唯一边**

②**顺时针**方向描边标号（描同一个面）

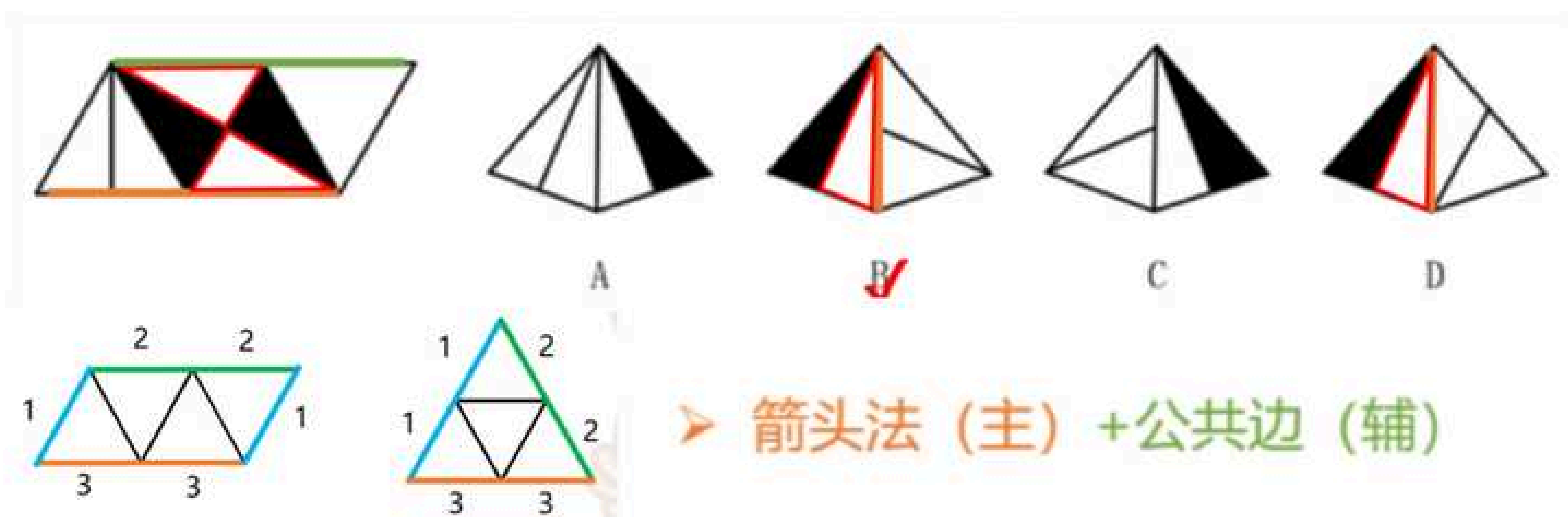
③题干与选项对应面**不一致**（排除）

● 公共边

◆如何用“公共边”解决四面体



- ① 展开图中构成一条直线的两条边,折合之后是同一条边
- ② 平行四边形两端的两条边是同一条边

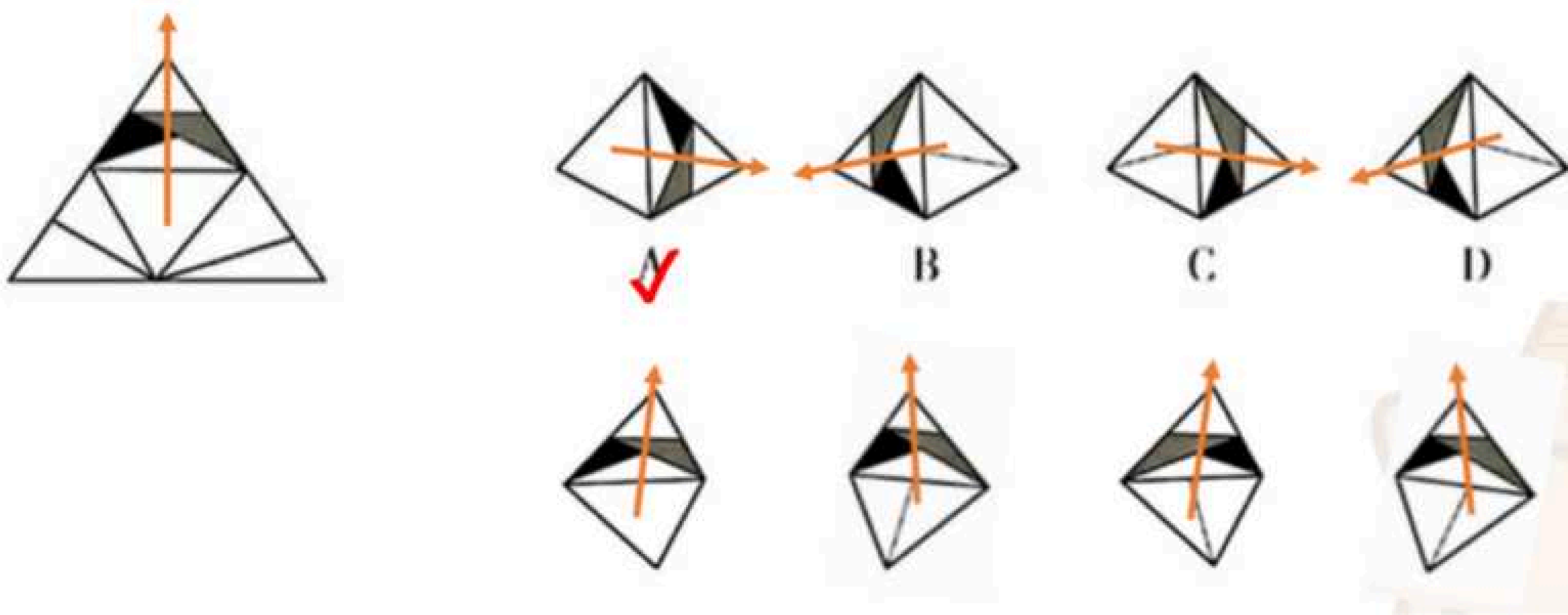


➤ 箭头法 (主) + 公共边 (辅)

小红书：@贝栗子

(24联考事业-77%) 左边给定的是纸盒外表面的展开图，右边哪一项能由它折叠而成？

➤ 箭头法 (主) + 公共边 (辅)



总结：

“箭头法” 熟悉后=有了 “想象力”



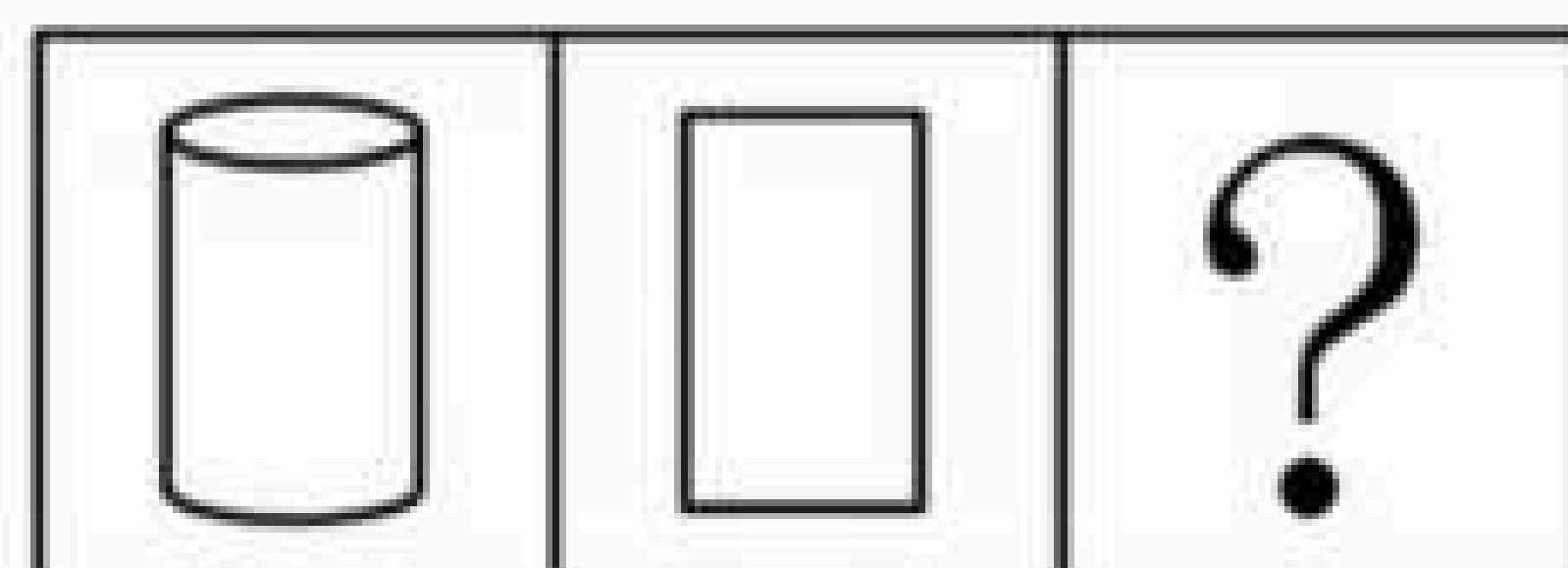
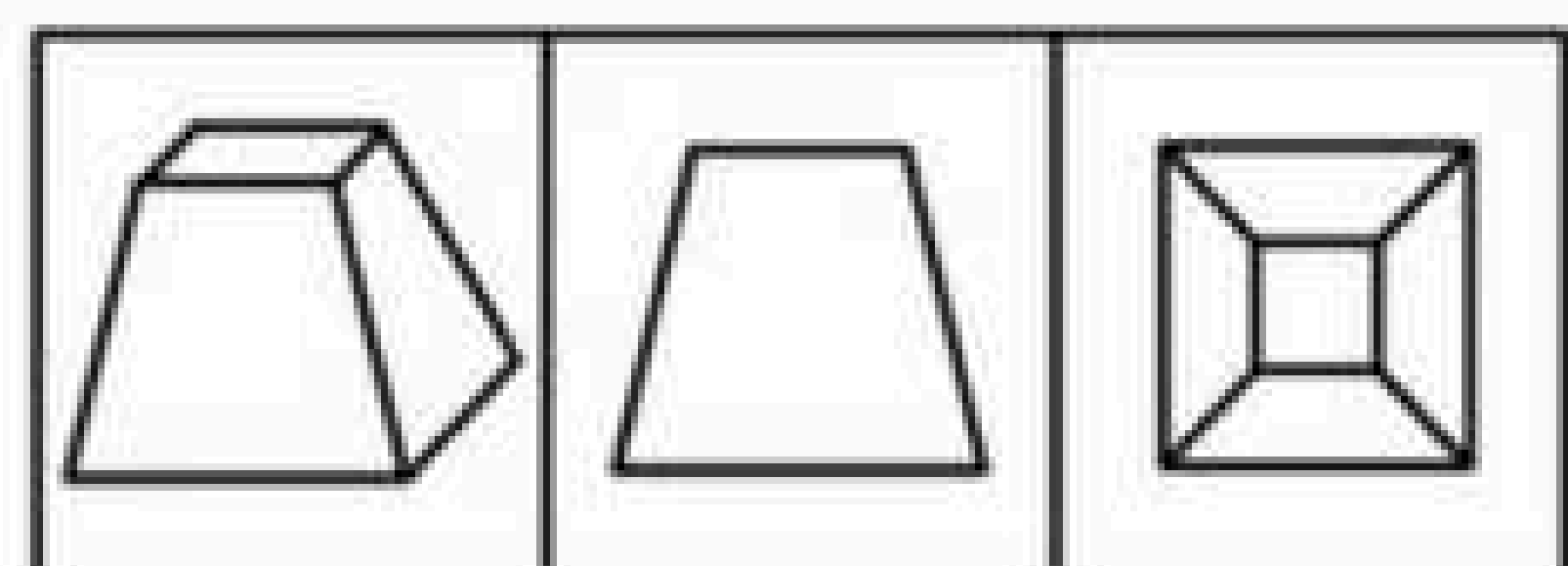
第七节：空间：三视图、截面

1. 三视图

题型判定

1. 下面四个选项中，符合左边立体图形的俯视图和左视图的是：

2. 从所给四个选项中，选择最合适的一个填入问号处，使之呈现一定规律性：

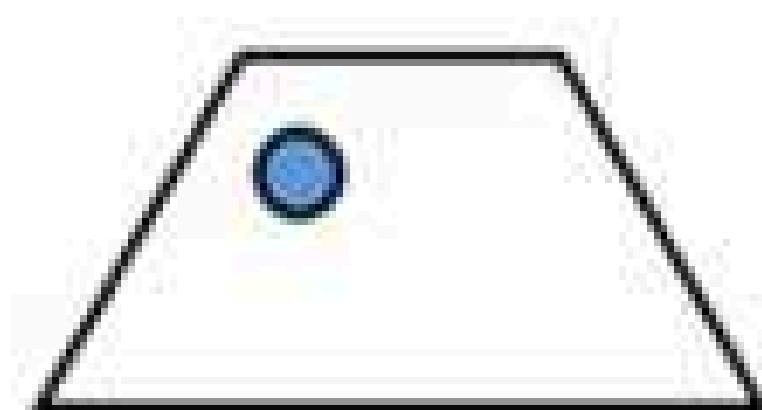


三视图指的是？

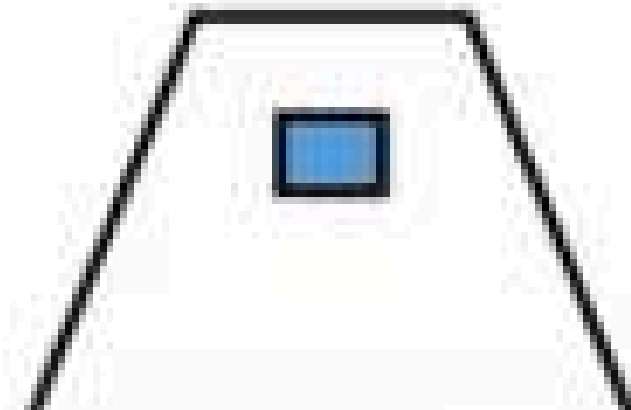
主视图（从正面看）

俯视图（从头顶向下看）

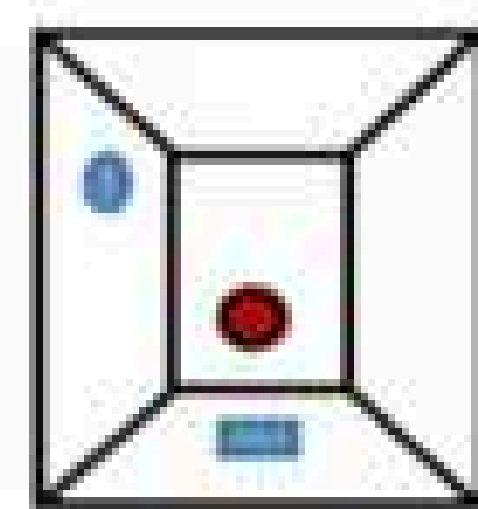
左视图（从左侧看）



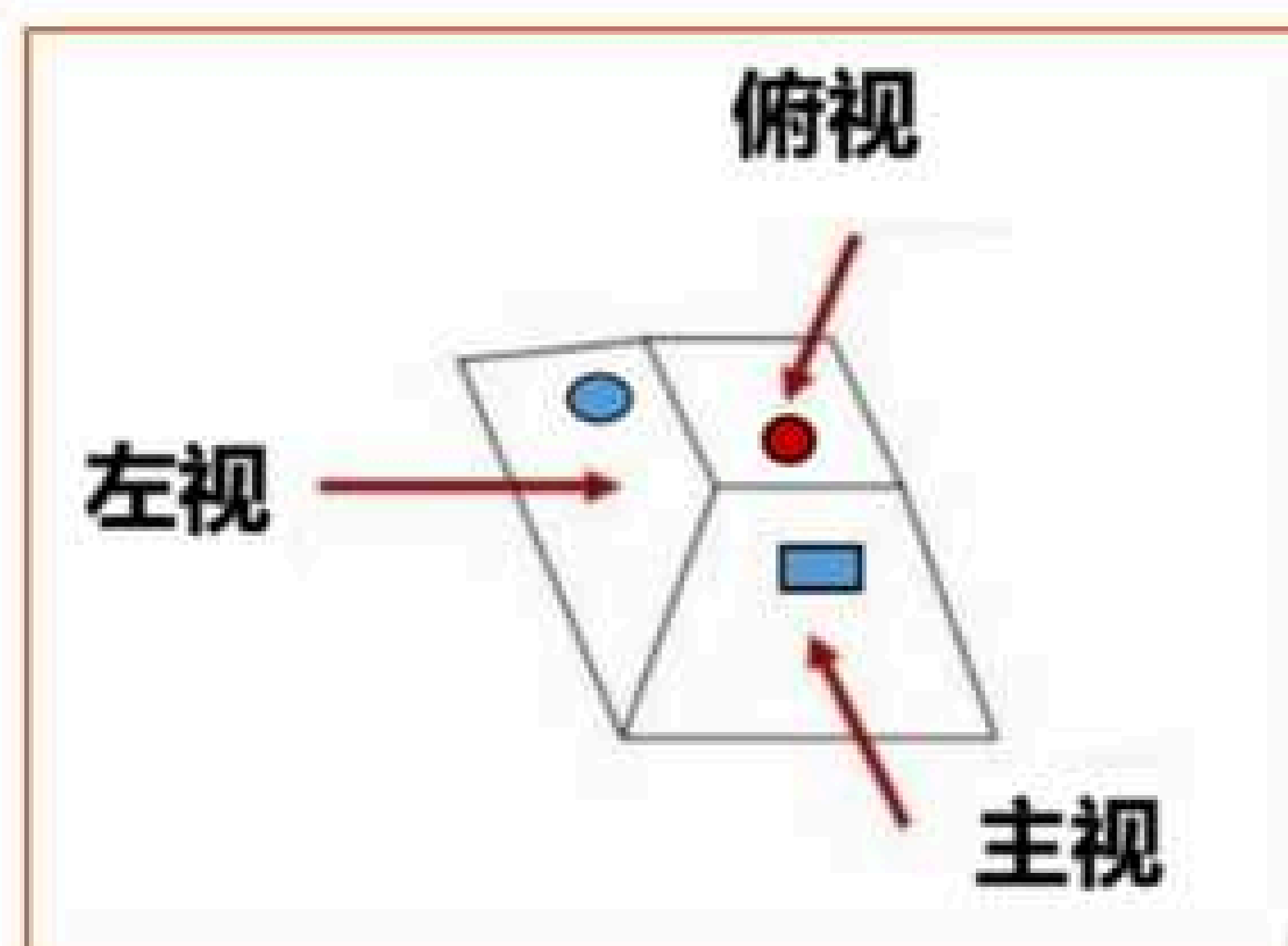
左视图



主视图



俯视图



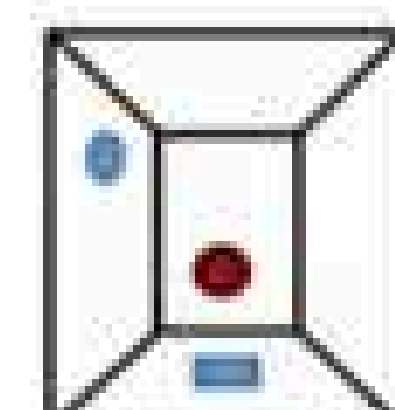
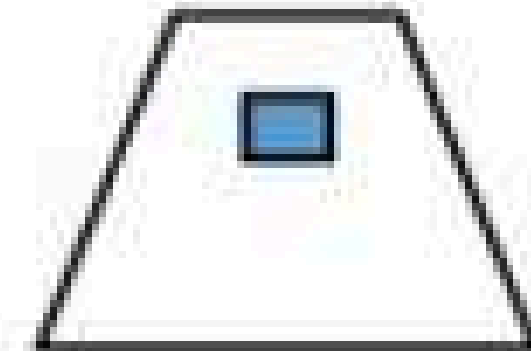
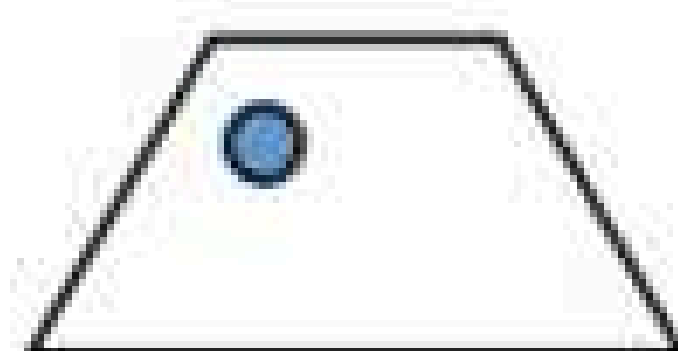
三视图和视图的区别？

三视图：主视图，俯视图，左视图

视图：任意的角度

注意点

(1) 观察到的三视图都是平面图



(2) 原图有线，选项不一定有线，原图没线，选项一定没线

是否画线

原图无线

不画

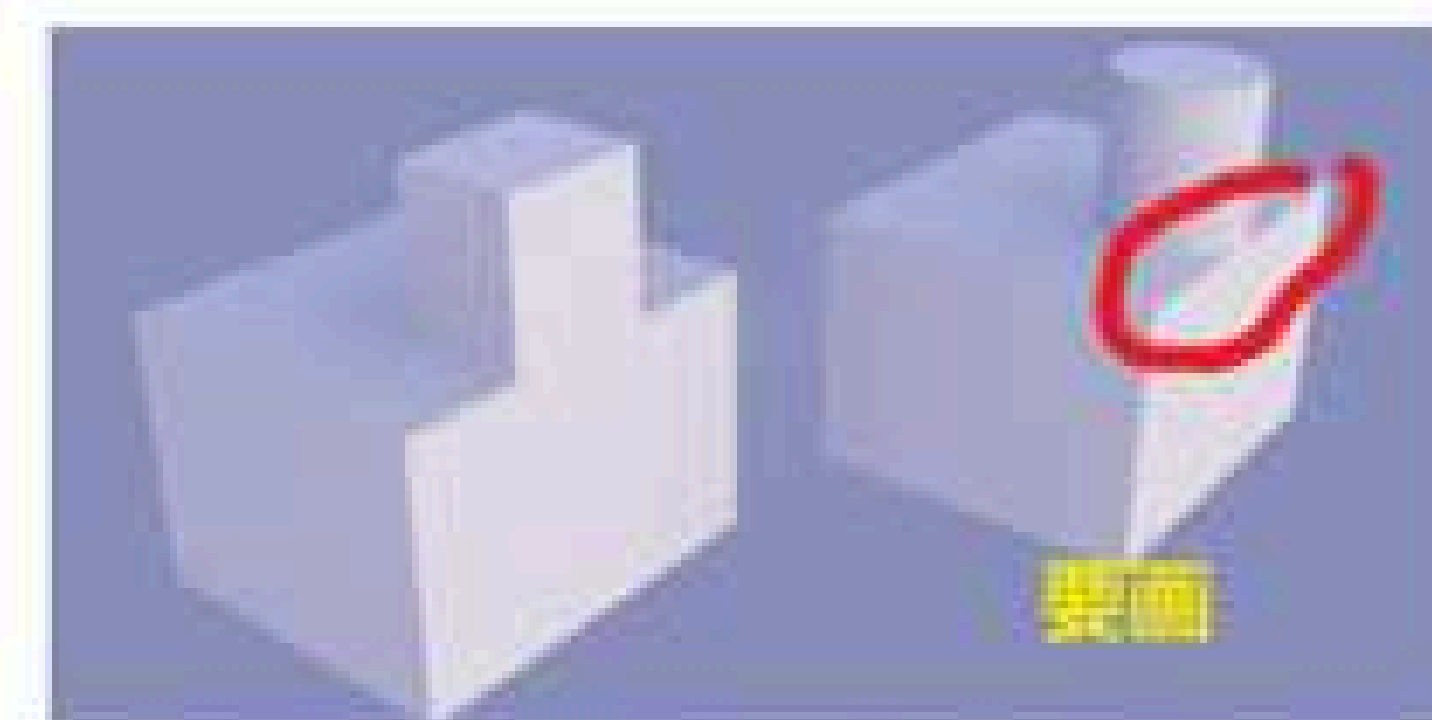
原图有线

不画

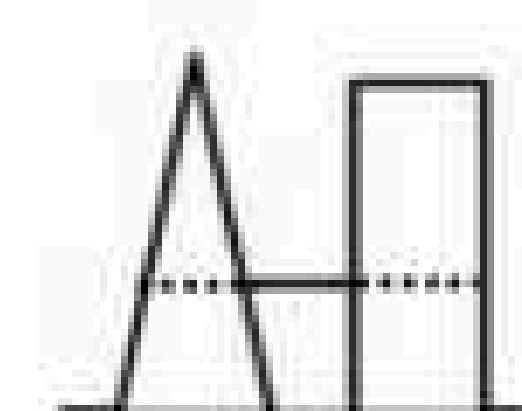
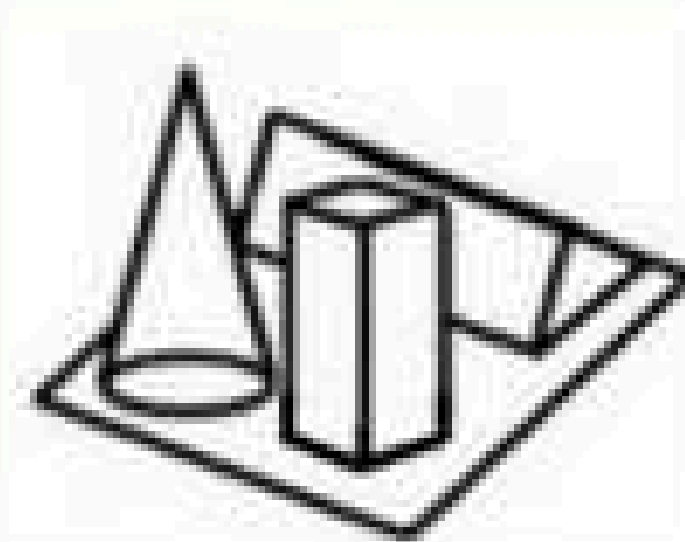
同个平面

要画

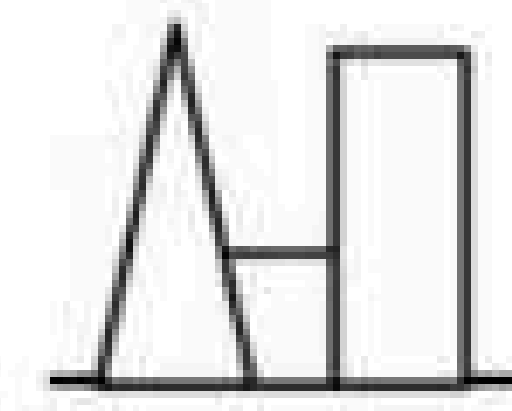
不同平面



(3) 当被遮挡住时，看不见被遮挡部分

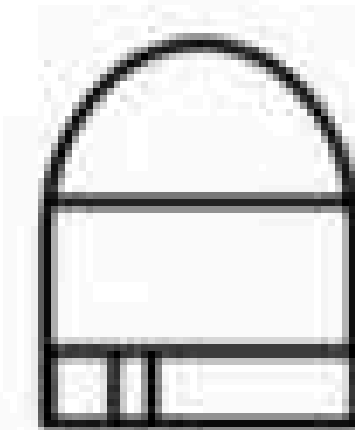
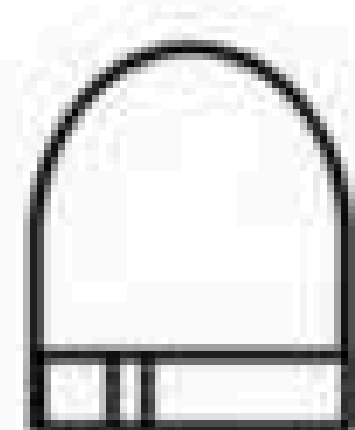


虚线表示

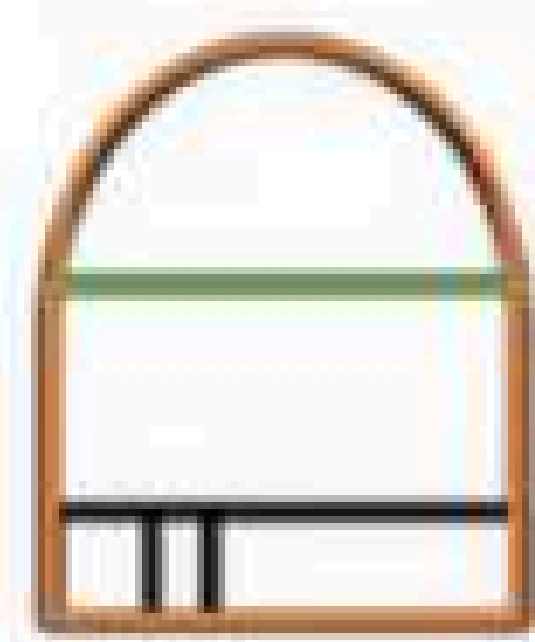
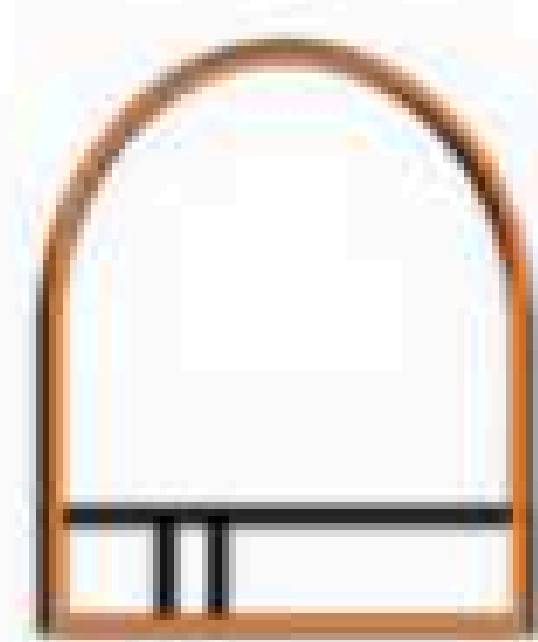
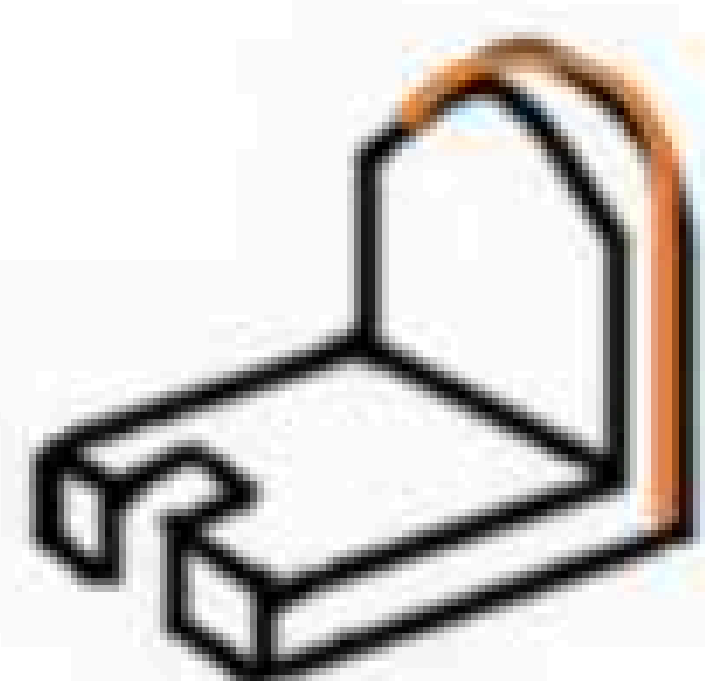


不画线表示

(4) 曲面会变成直线图



答题思路

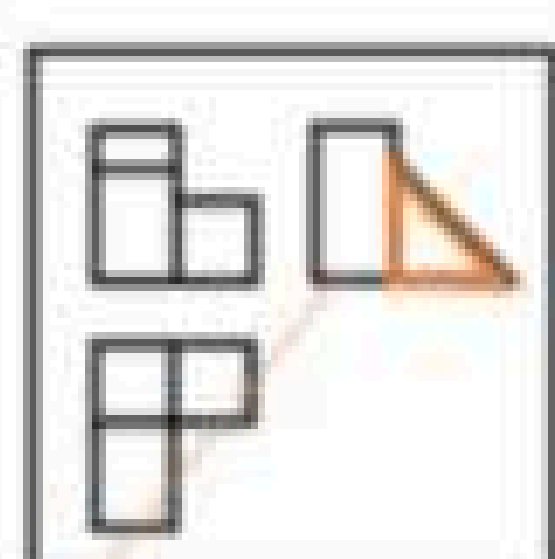
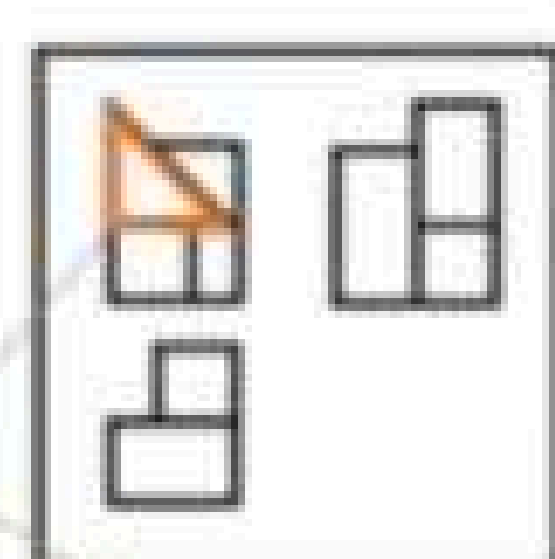
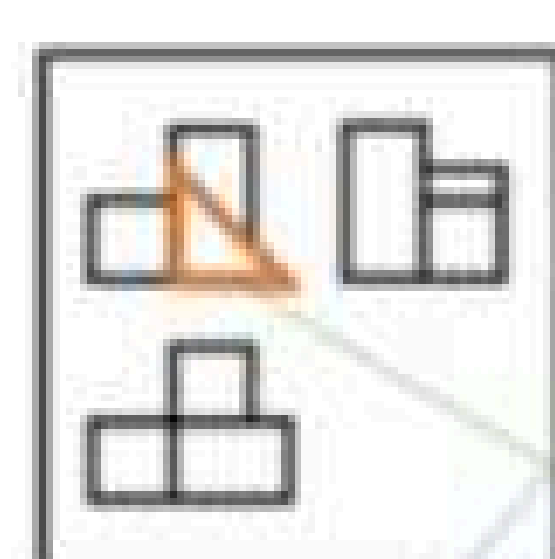


来源于小红书@贝栗子

➤ 外部轮廓定方向，内部线条定选项

小红书：@贝栗子

下面三视图依次与三个几何图形对应，三个几何图形的正确顺序是：

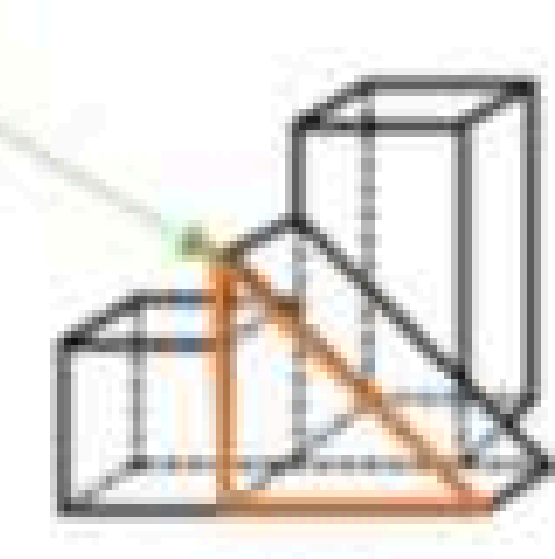
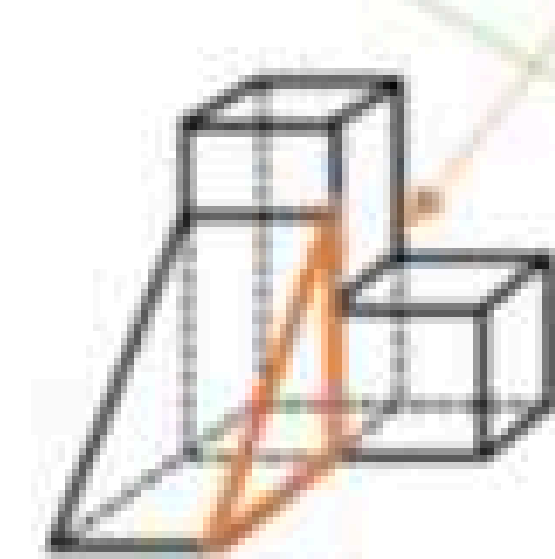
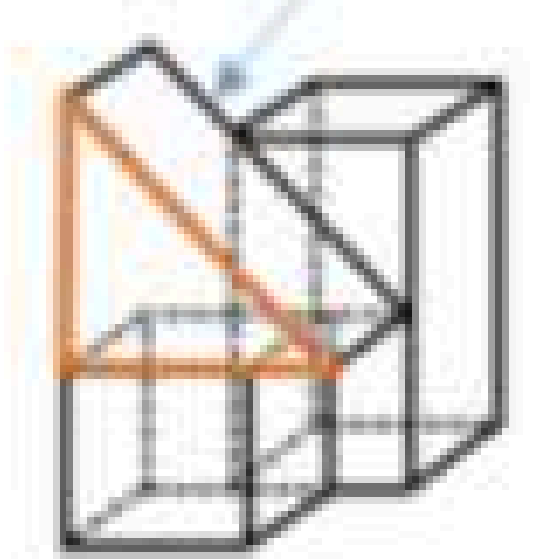


A. ②①③

B. ②③①

C. ①③②

✓ D. ③①②



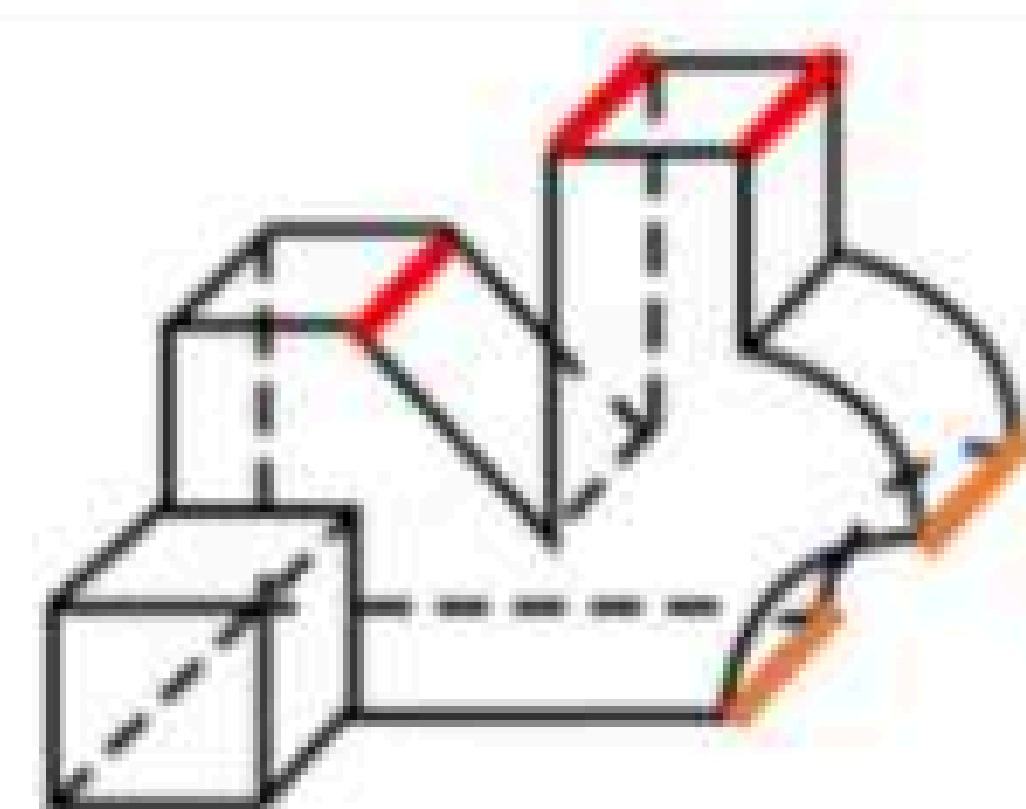
①

②

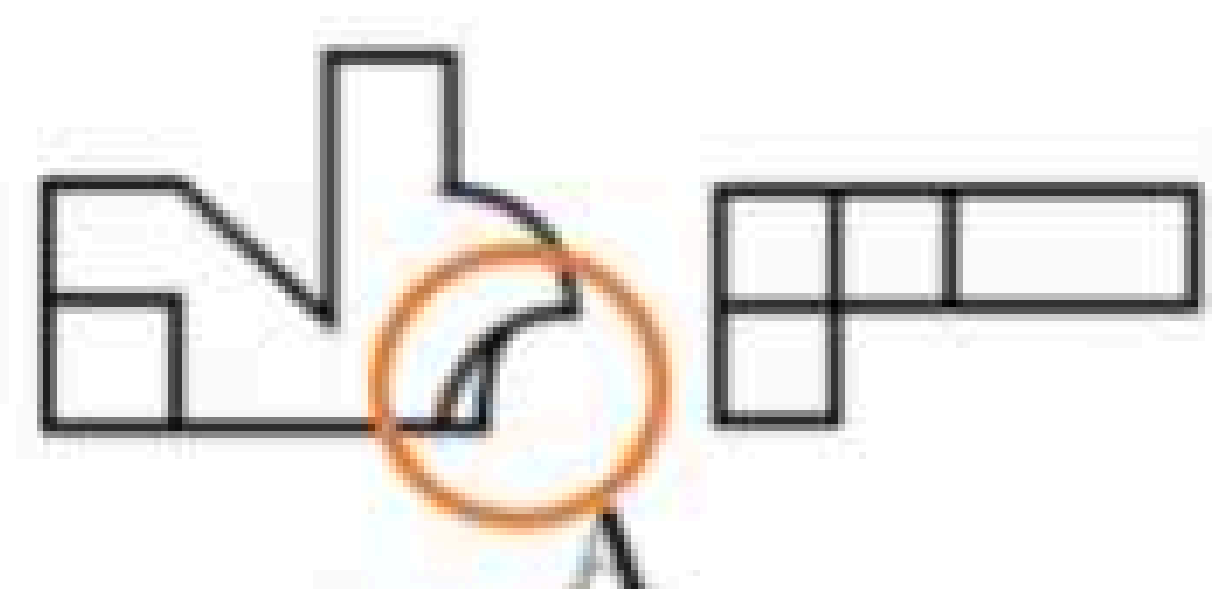
③

➤ 答题思路：外部轮廓定方向，内部线条定选项

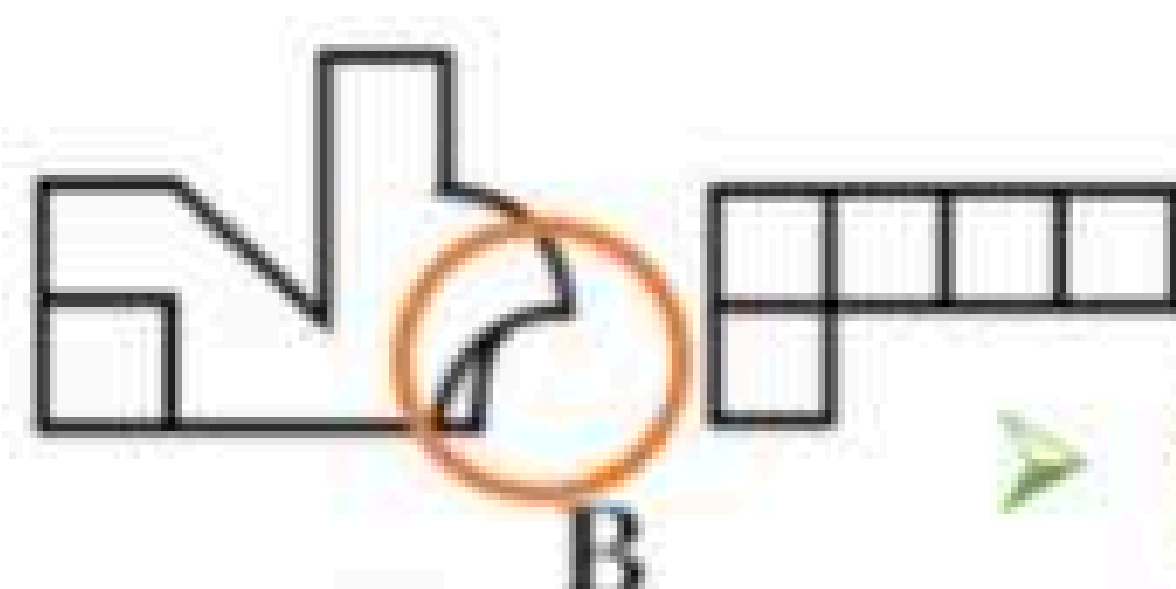
➤ 外部轮廓：找特殊



➤ 线条平行，看不见



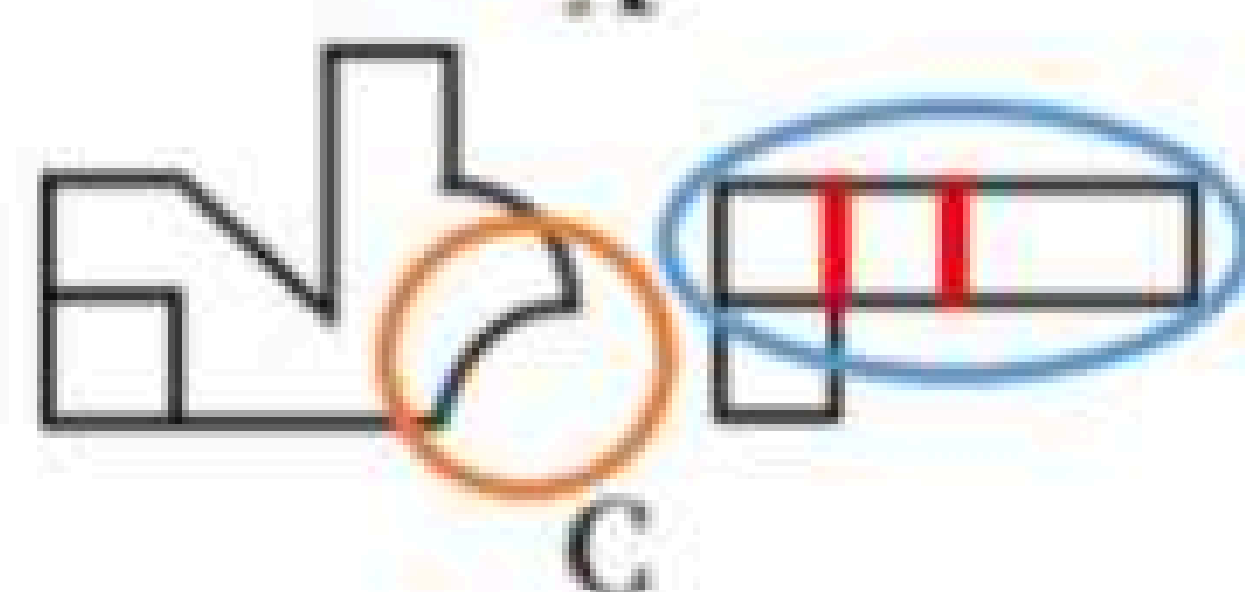
A



B

➤ 答题思路：对比选项，找差异

➤ 答题思路：外部轮廓定方向，内部线条定选项



C



D



4. (25广东-79%) 如图所示，四棱锥的底面为矩形，其中一条棱垂直于底面，那么该四棱锥的俯视图最有可能是。

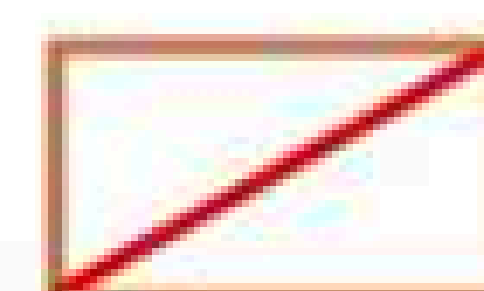
➤ “这1条蓝线”俯视图能看见吗？



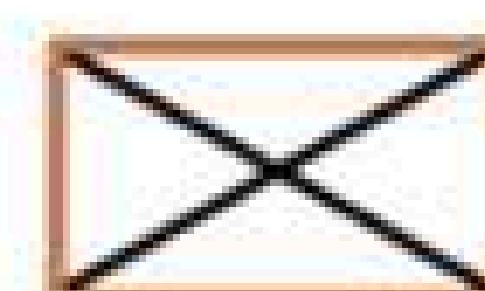
A



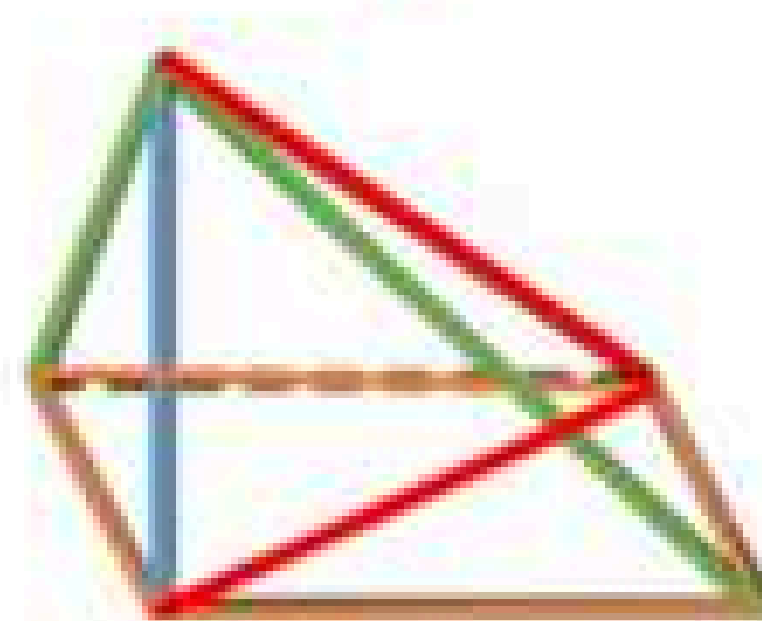
B



C



D

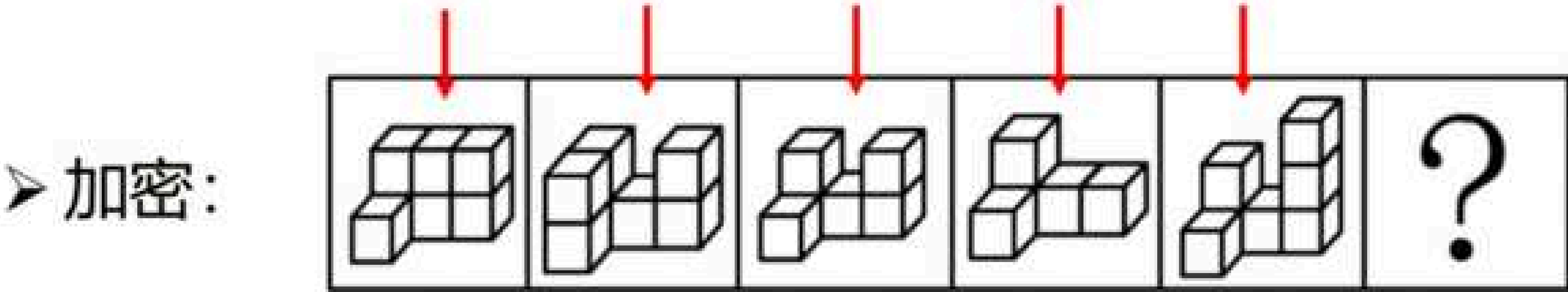


➤ “这2条绿线”俯视图能看见吗？

➤ “这1条红线”俯视图能看见吗？

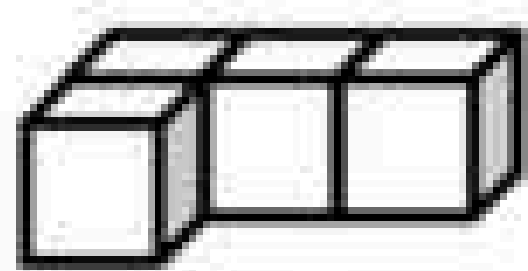
➤ 答题思路：外部轮廓定方向，内部线条定选项

加密1

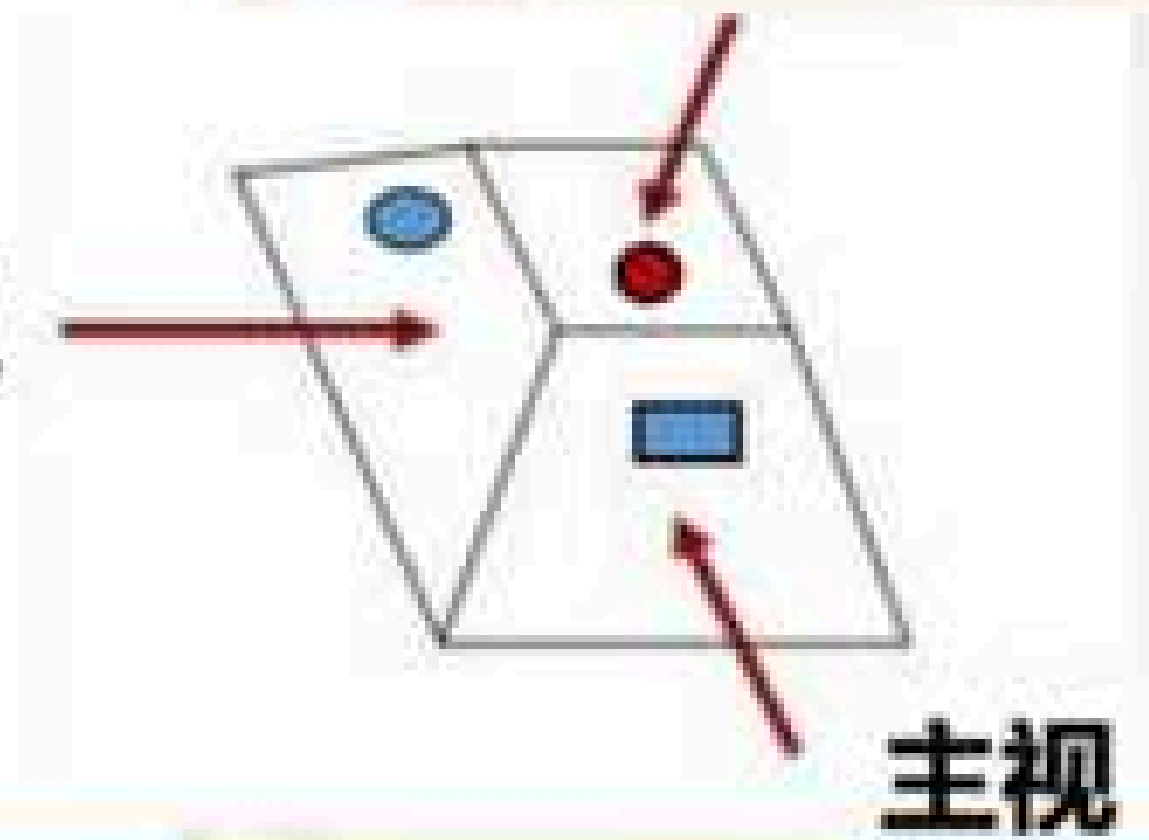


“小方块”考查三视图

➤ 加密: 对比题干, 找相同视角

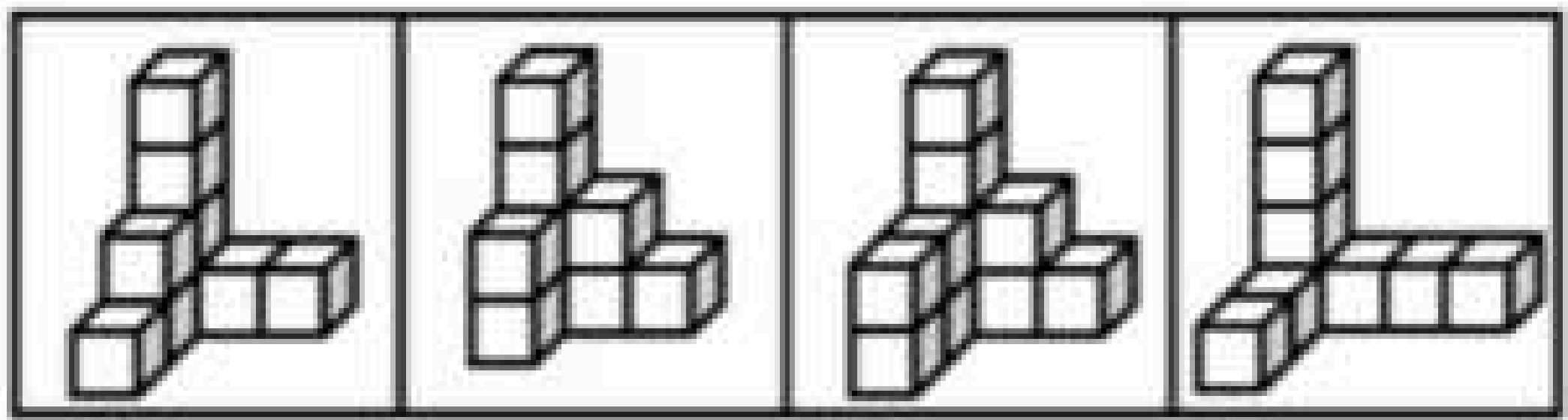
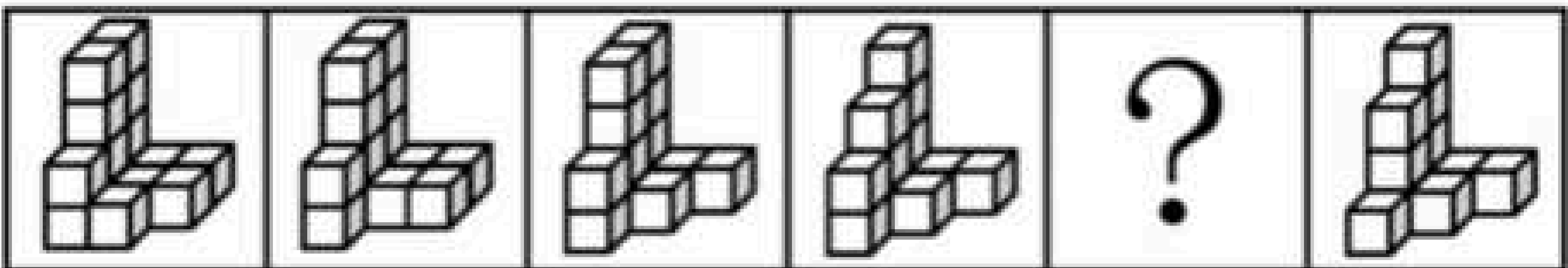


左视



俯视

主视

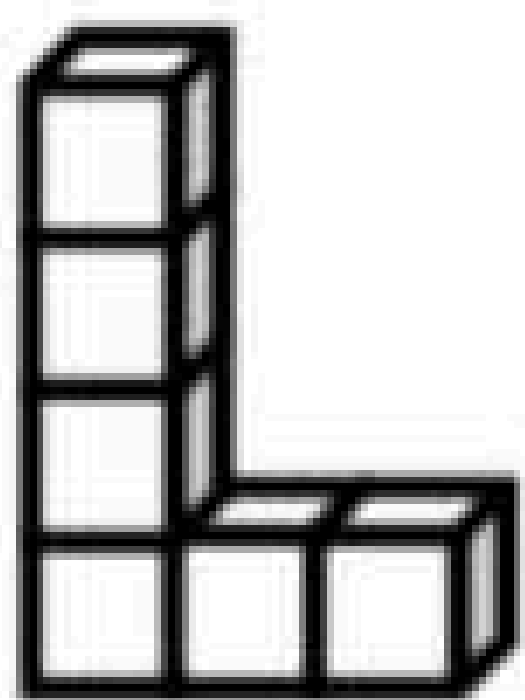


A

B

C

D



主视图

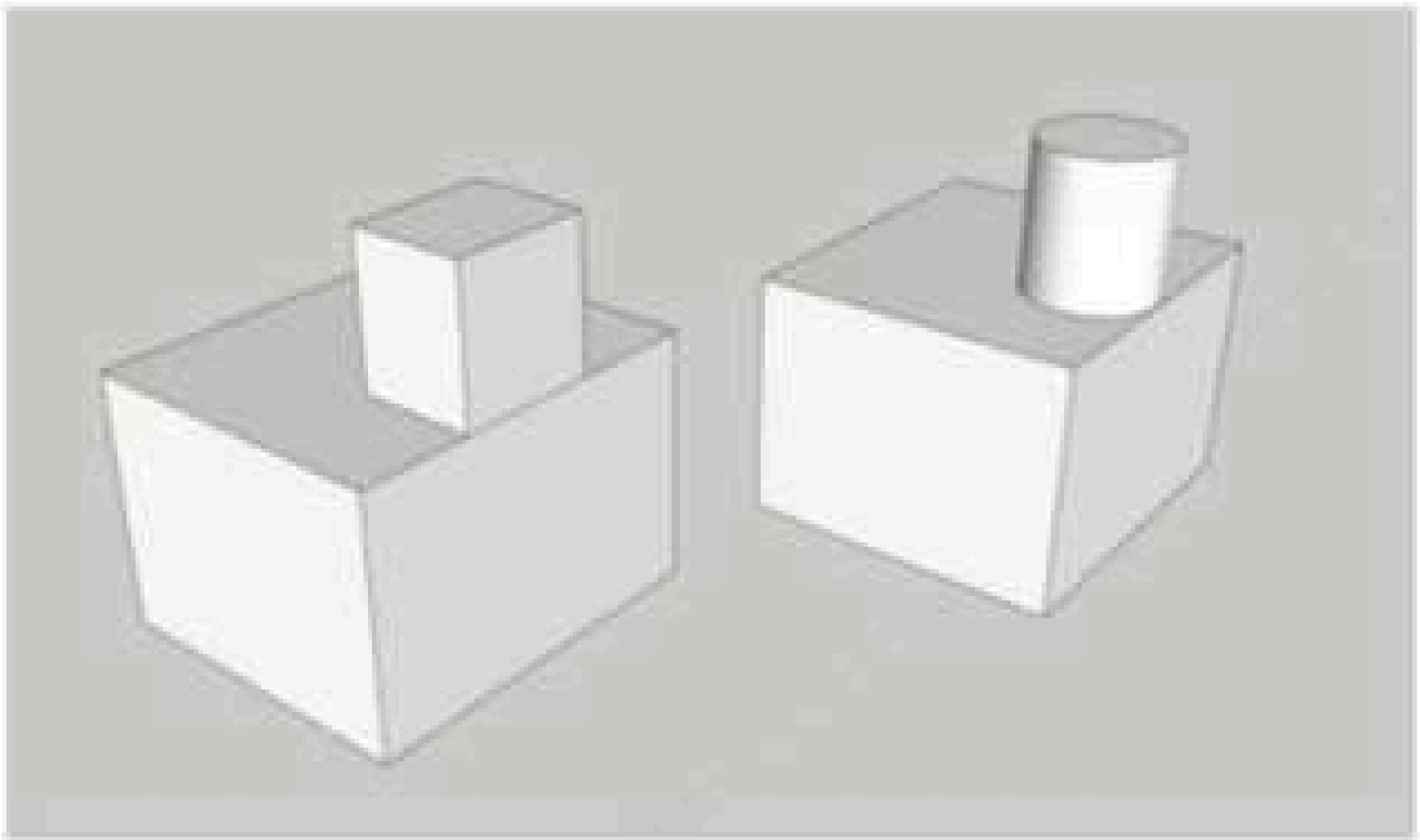


➤ 对比题干, 找相同视角

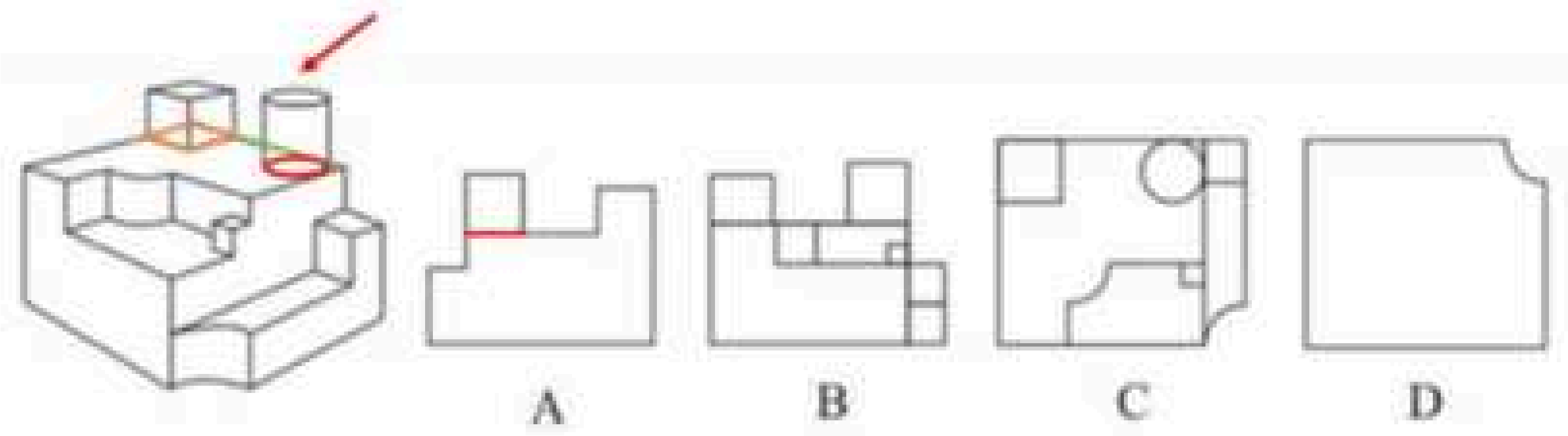
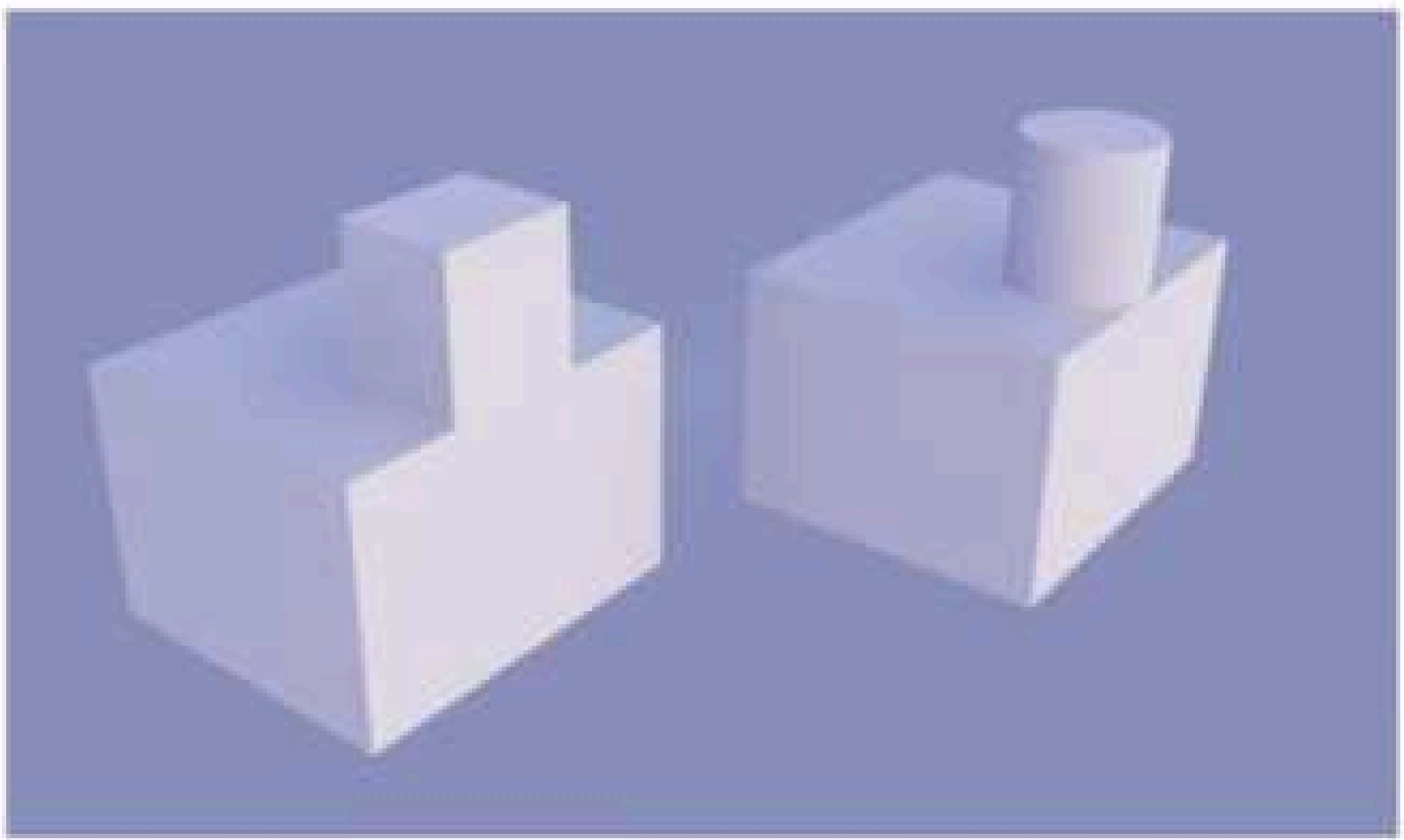
。观察发现, 题干图形的主视图均相同呈“L”形, 只有A项的主视图与题干相同。

➤ 三视图-小结

➤ 出题者“小心思”是否画线?



是否画线	原图无线	不画
	原图有线	不画 { 同个平面 要画 { 不同平面



A

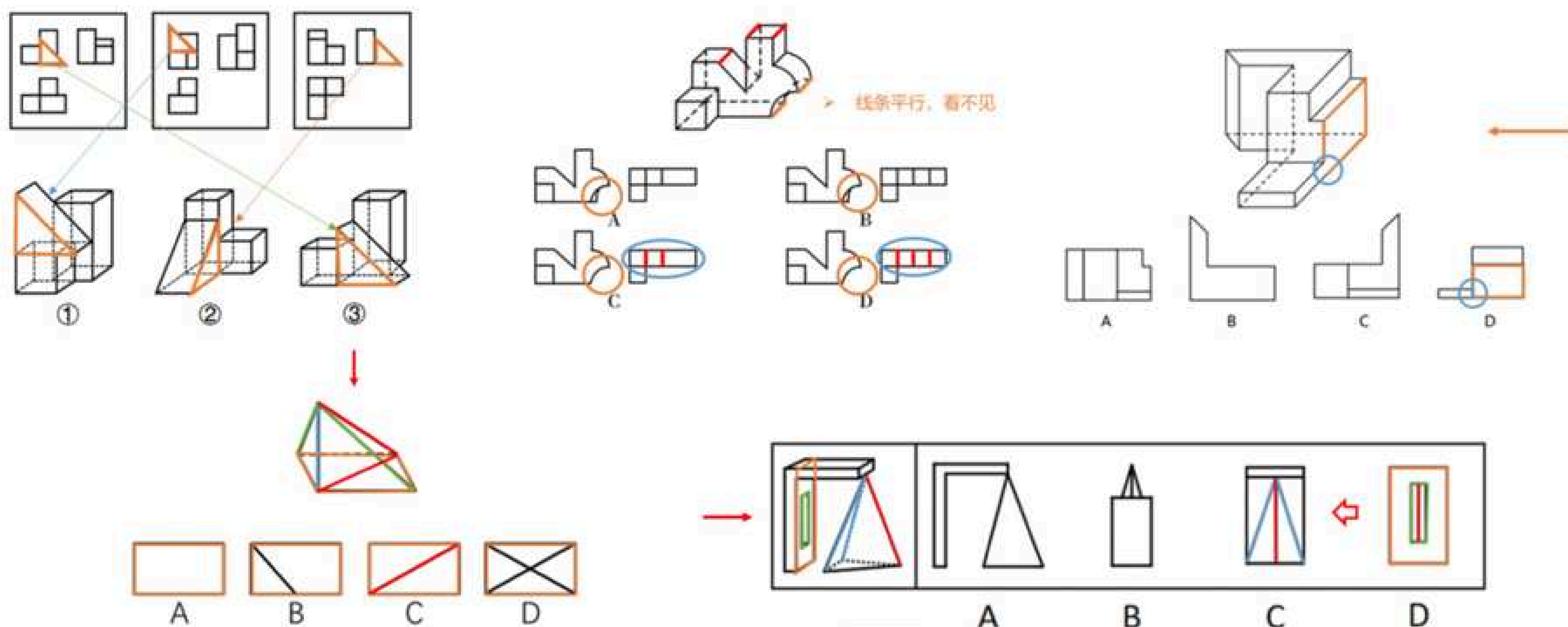
B

C

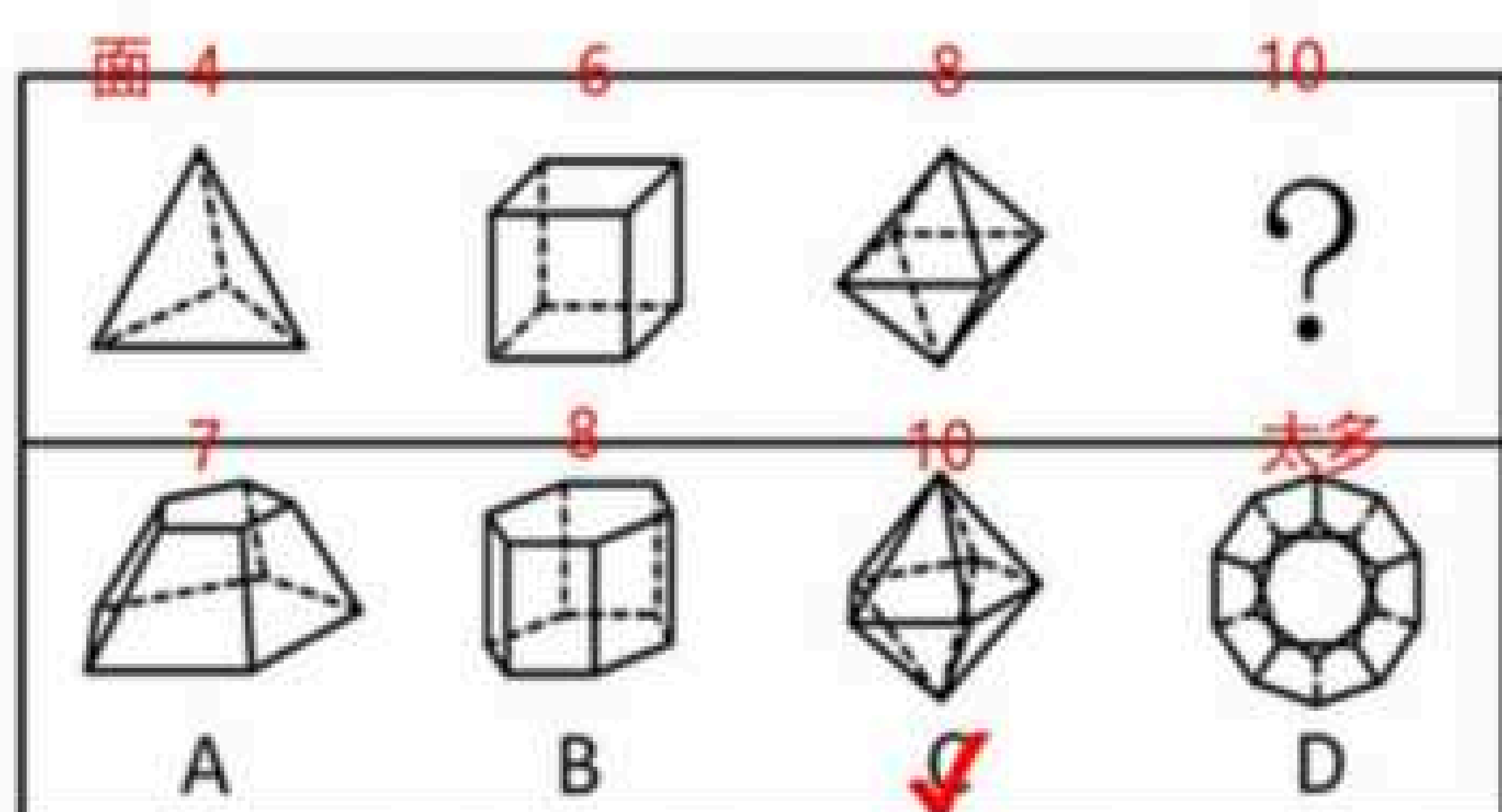
D

三视图-小结

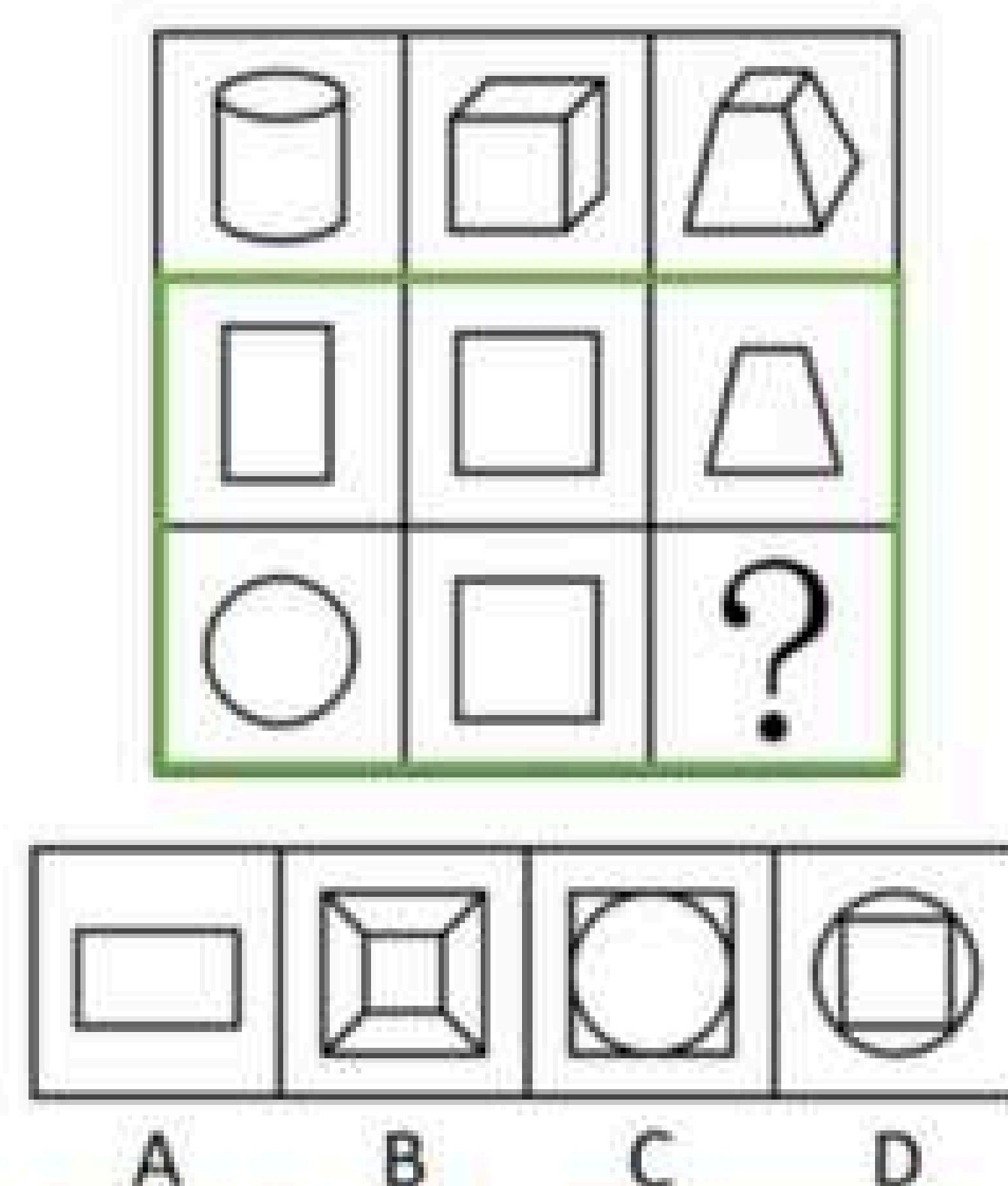
答题思路：外部轮廓定方向，内部线条定选项



混淆：考查“空间”还是“平面”？



【2023上海】全部-面数量

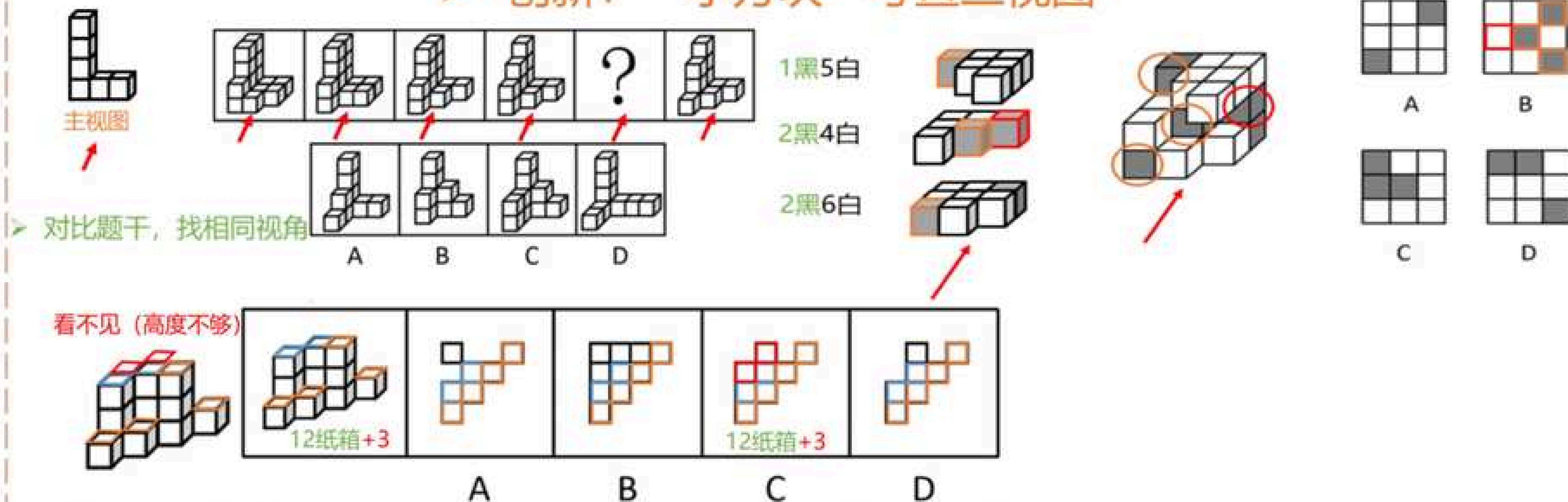


【2025联考】三视图

区分：考查平面，图案之间关联度低；反之，考查空间，图案之间关联度高。

三视图-小结

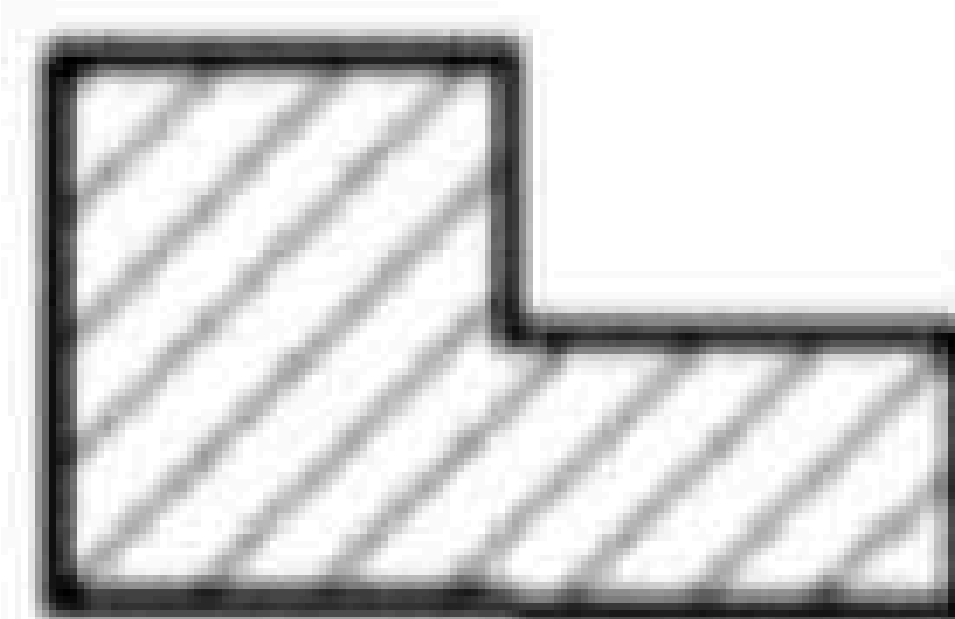
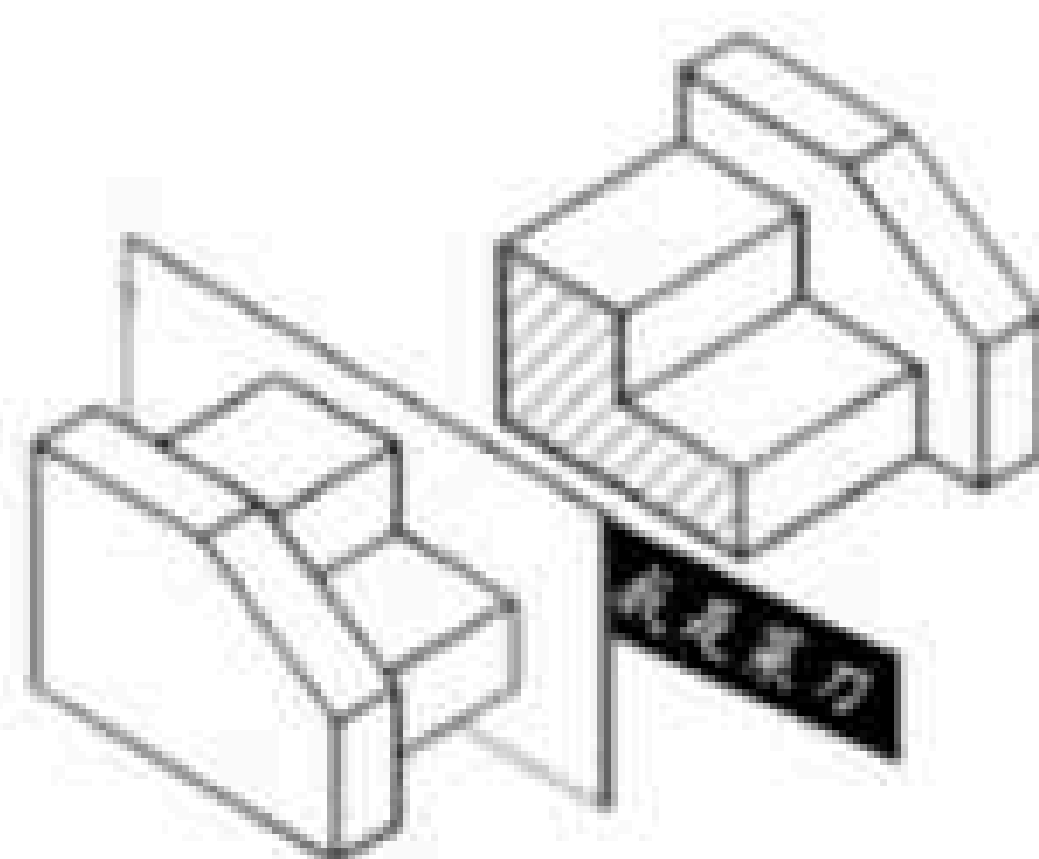
创新：“小方块”考查三视图



2. 截面

什么是截面？

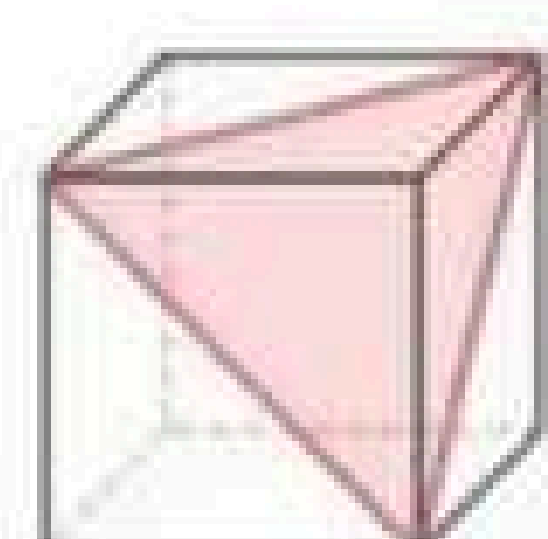
指的是被切部分的形状



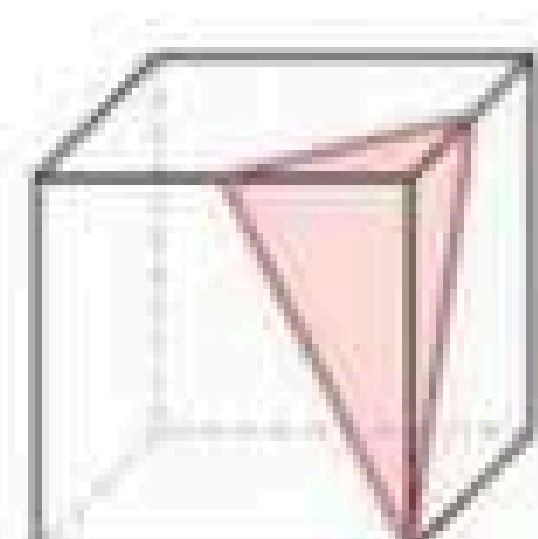
➤ 切割原则：①一刀切 ②刀无限大 ③不能拐弯

➤ 解密：① 常见立体图形 ② 复杂立体 → 常见立体图形

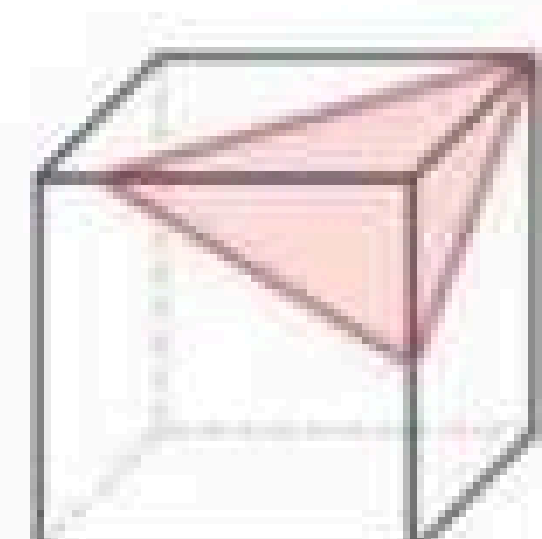
常见立体图形



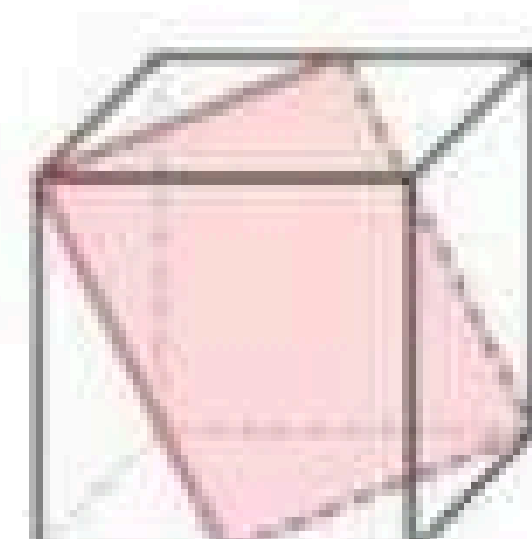
等边三角形



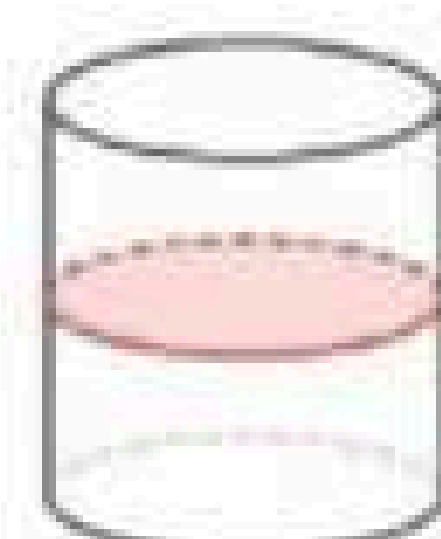
等腰三角形



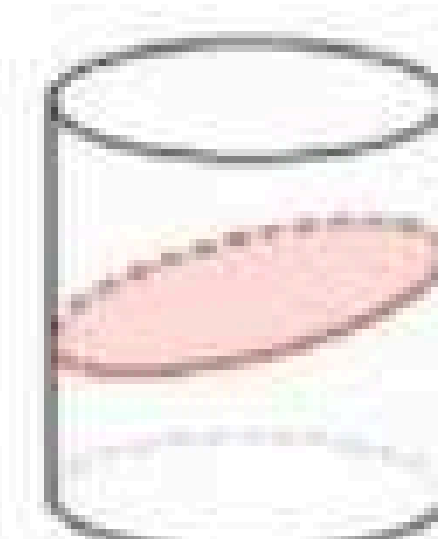
锐角三角形



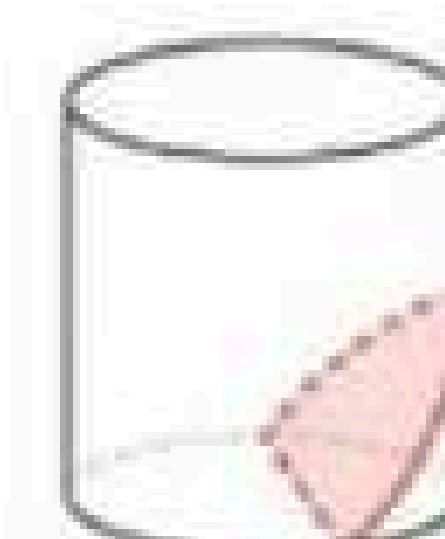
菱形



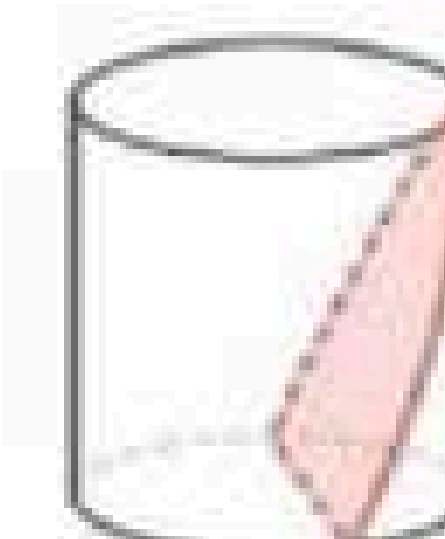
圆形



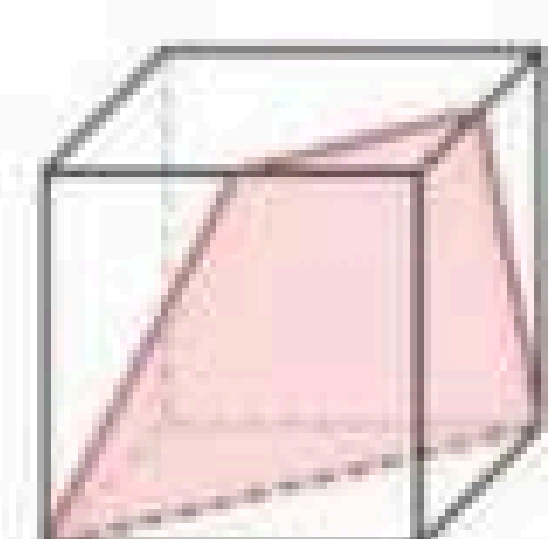
椭圆



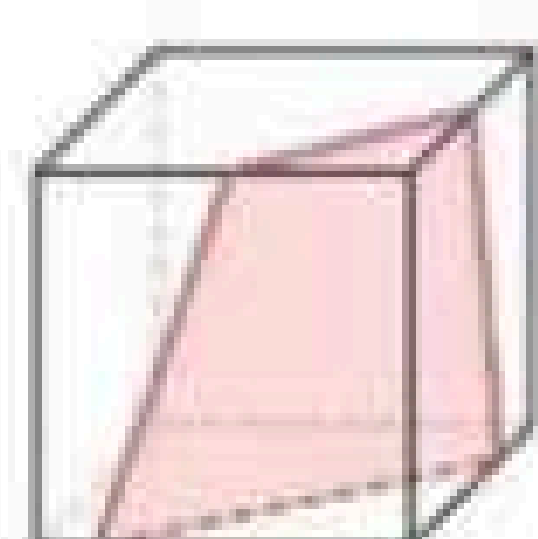
曲线+直线



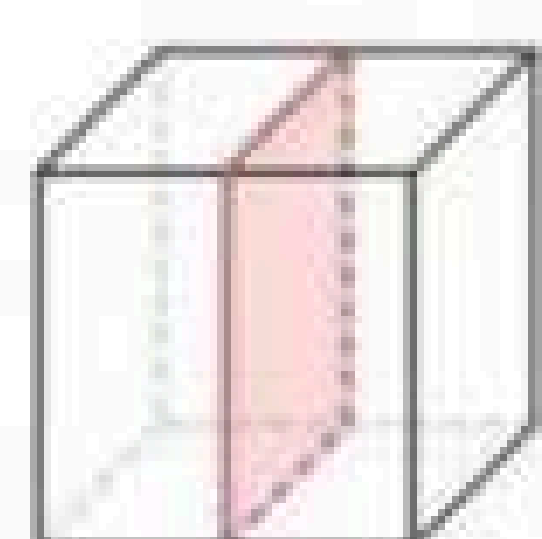
曲线+直线



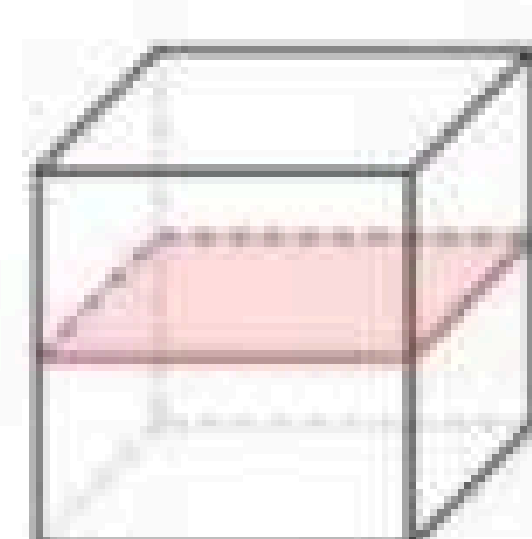
等腰梯形



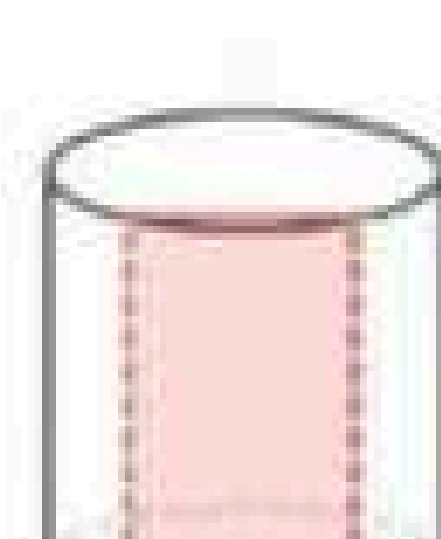
普通梯形



正方形



正方形



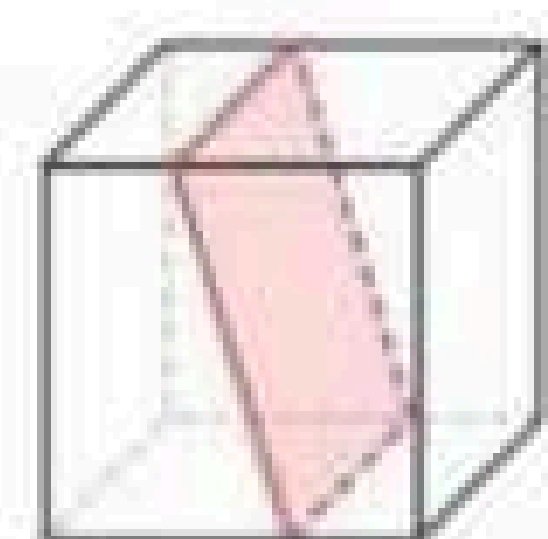
矩形



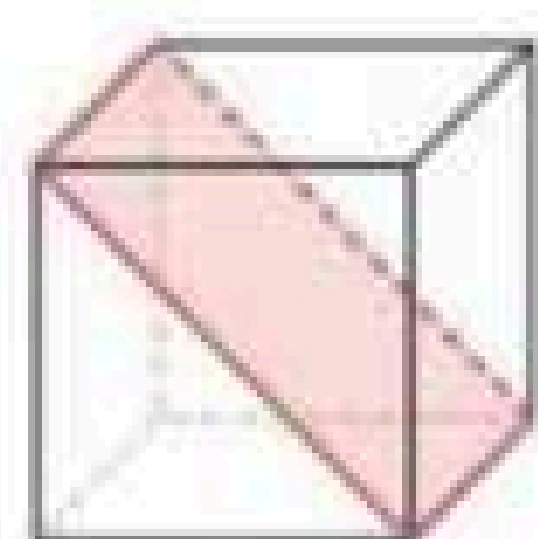
矩形



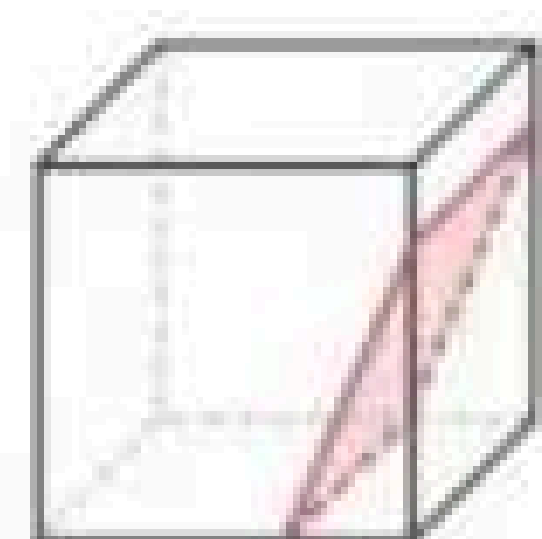
鼓形



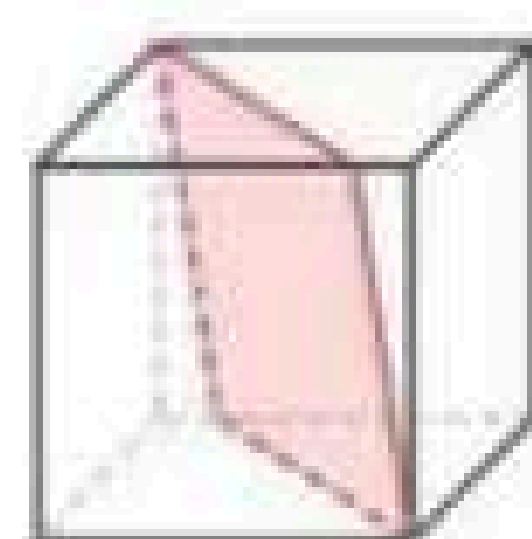
矩形



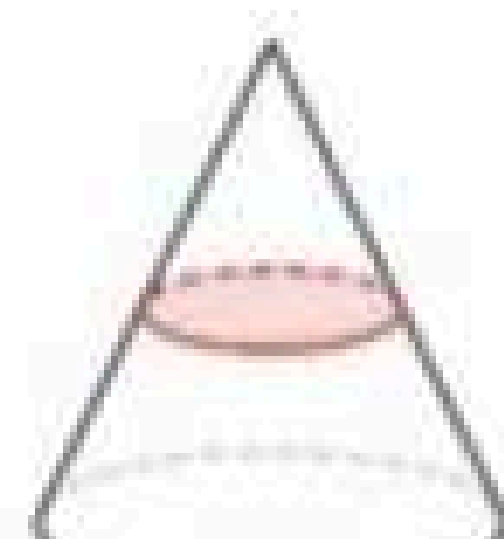
矩形



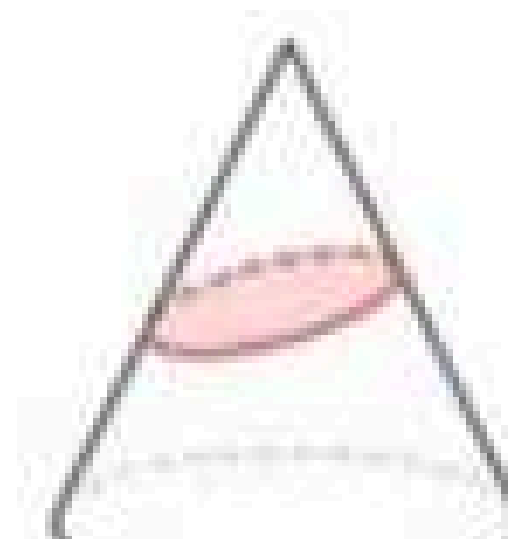
矩形



平行四边形



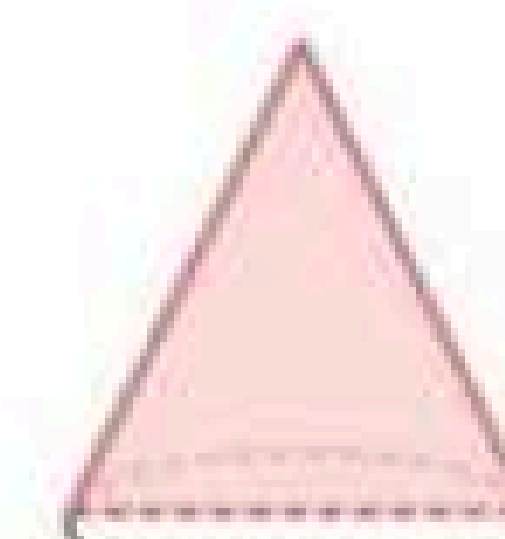
圆形



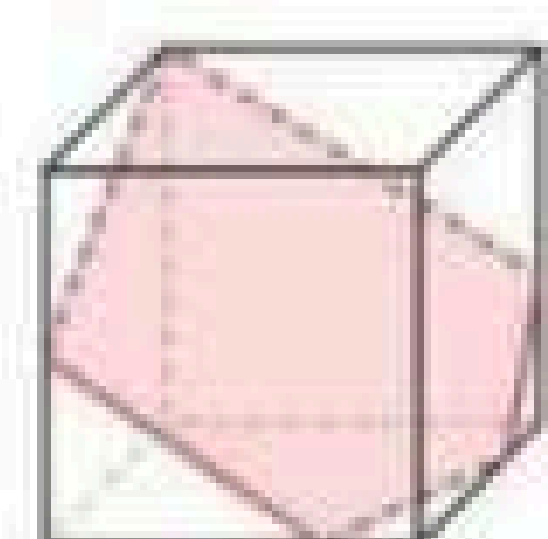
椭圆



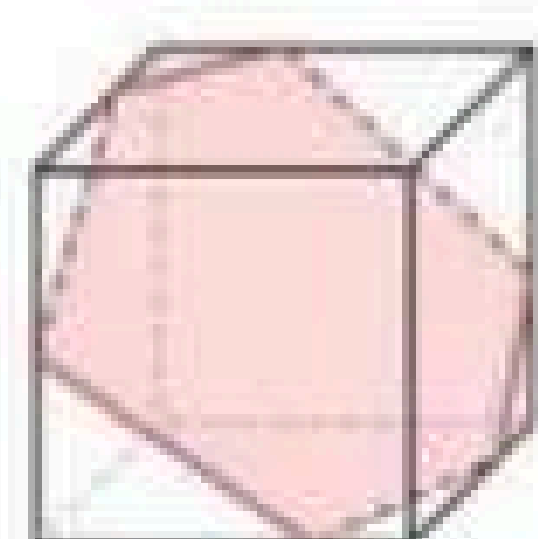
曲线+直线



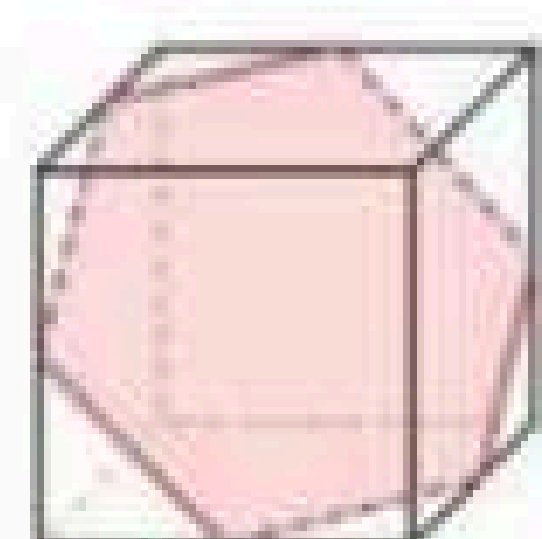
等腰三角形



普通五边形



普通六边形



正六边形



圆形



椭圆



曲线+直线



等腰梯形

➤ Q1: 能否切出“直角三角形”？

➤ 不能

➤ Q2: 斜切能切出“正方形”？

➤ 能

➤ Q3: 六面体最多能切出“几边形”？

➤ 6 (经过几个面，切几边形)

➤ Q1: 完整图形能否切出“半圆”？

➤ 考试多数情况都是“半椭圆”

➤ Q2: 圆柱能否切出“梯形”？

➤ 不能

➤ Q3: 切“圆形和椭圆”的区别在哪里？

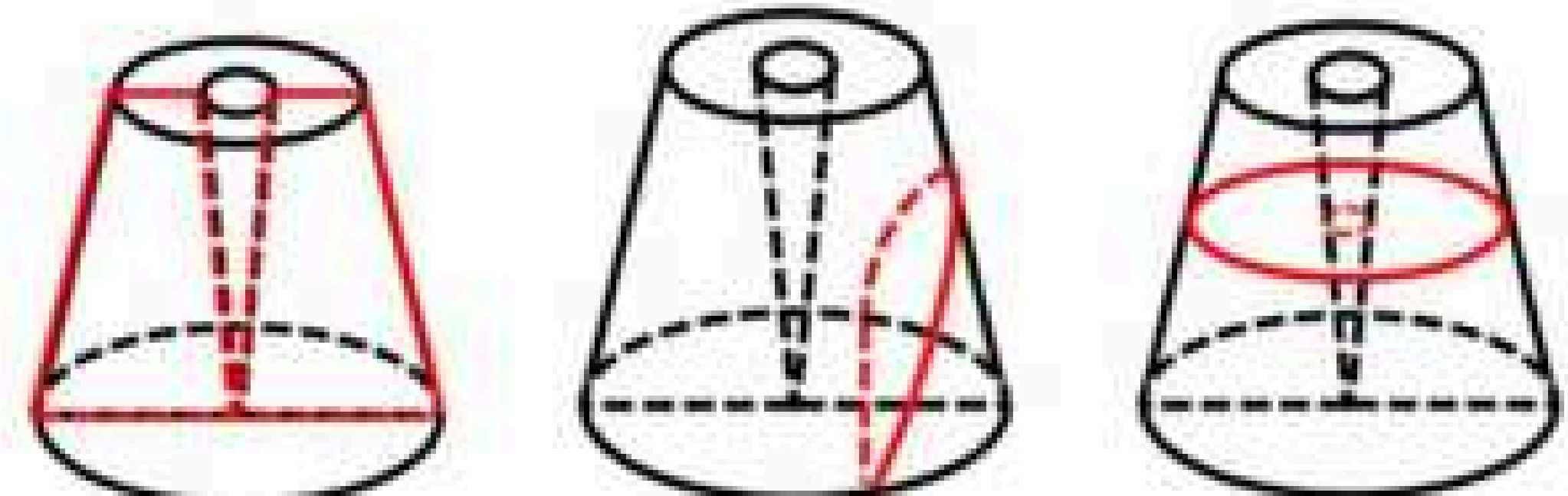
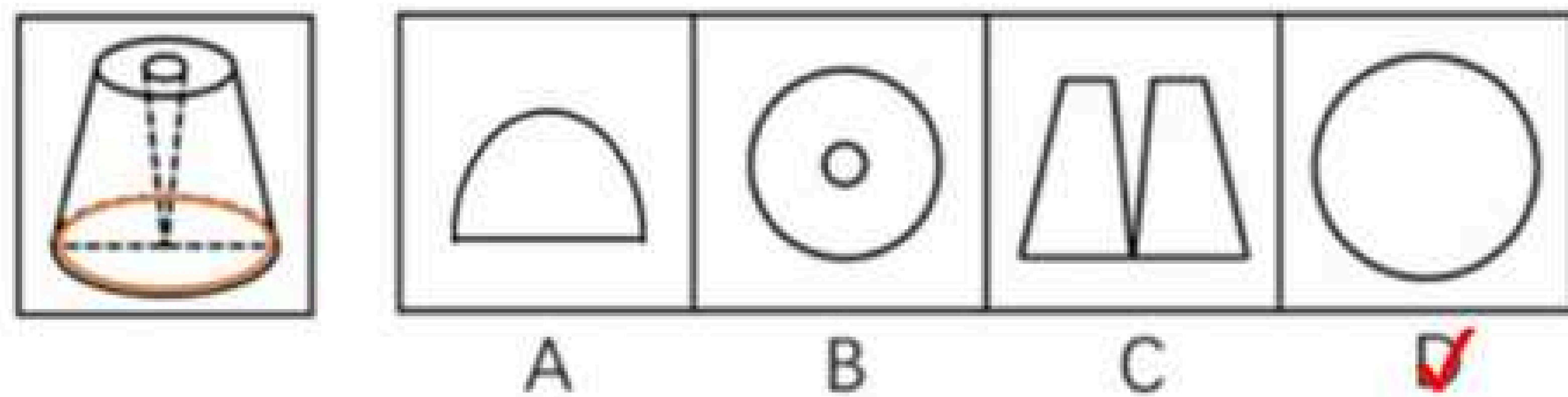
➤ 横切和斜切的区别

截面例题

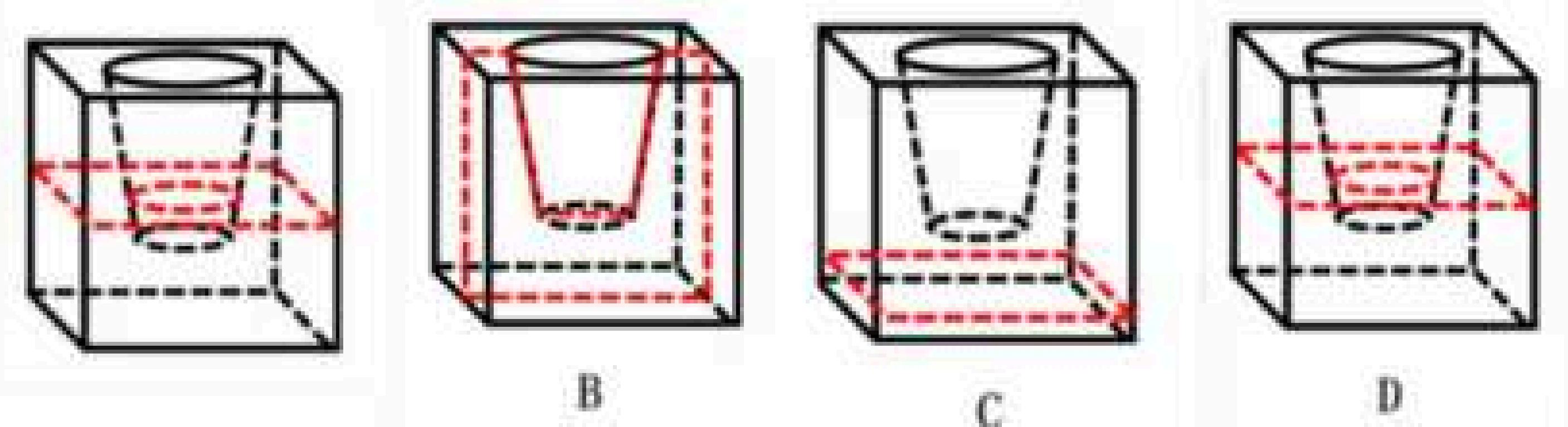
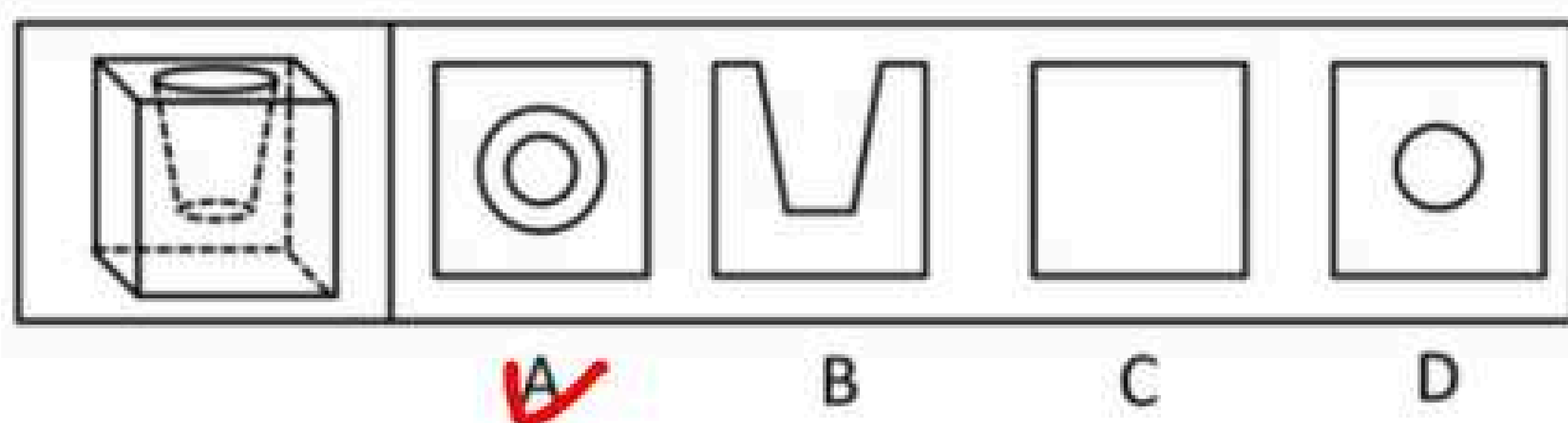
11. (20联考-74%) 一圆锥台如下图所示，从正中心挖掉一个小圆锥体，然后从任意面剖开，下面哪一项**不可能**是该圆锥台的截面？

➤ 外轮廓判断切割方向

➤ 极端：无限接近外表面？ 不考



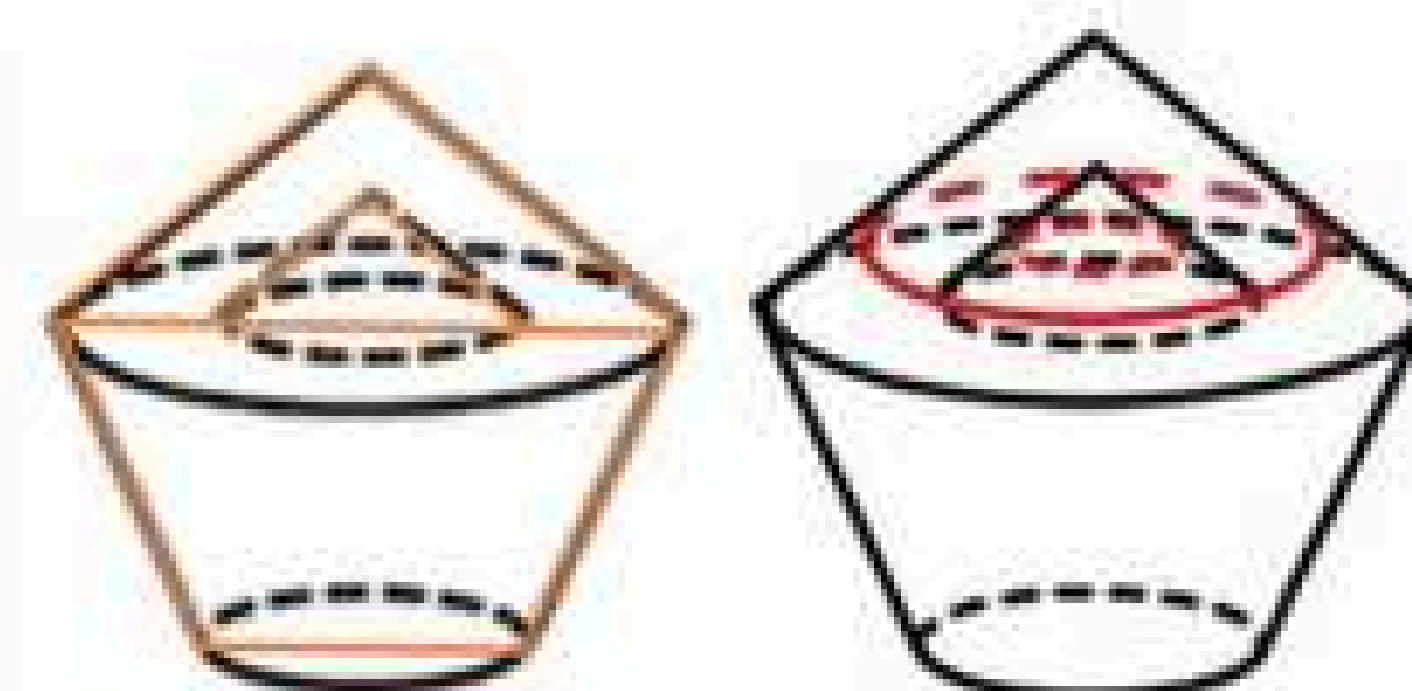
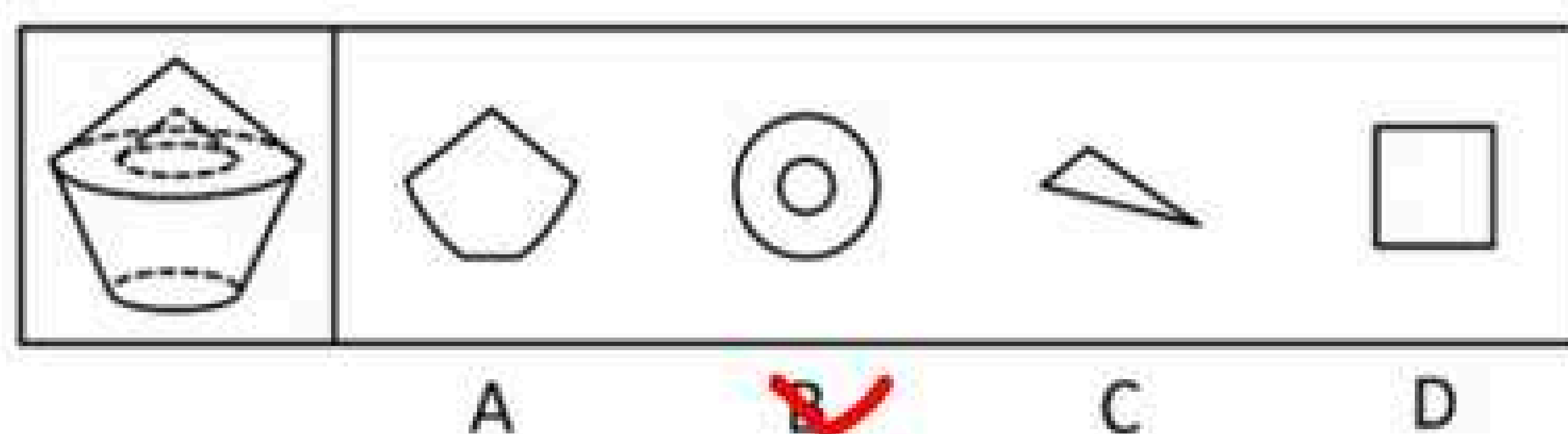
12. (21广东-75%) 下列选项中，**不属于**左侧立体图形的截面的是： ➤ 外轮廓判断切割方向



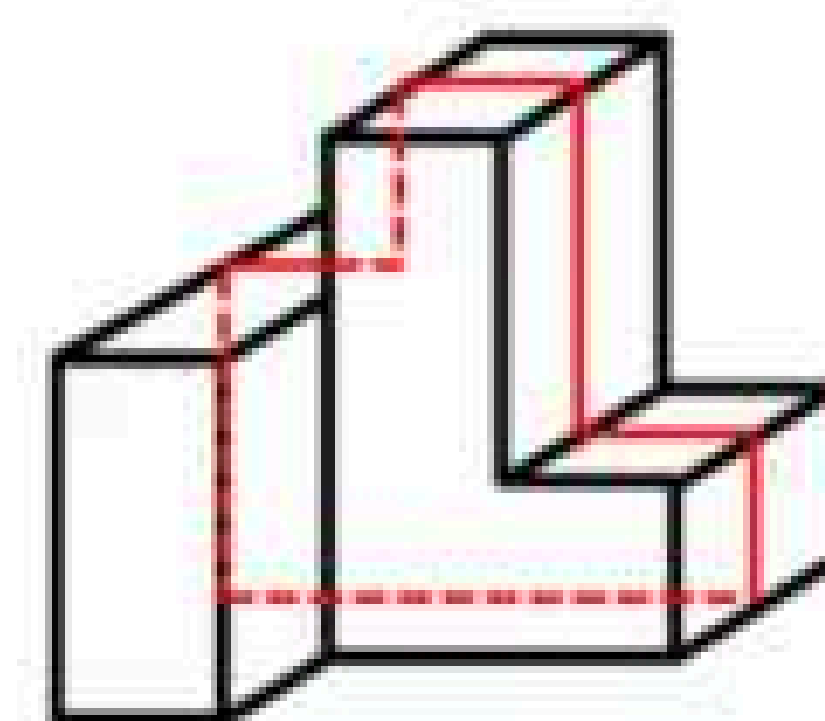
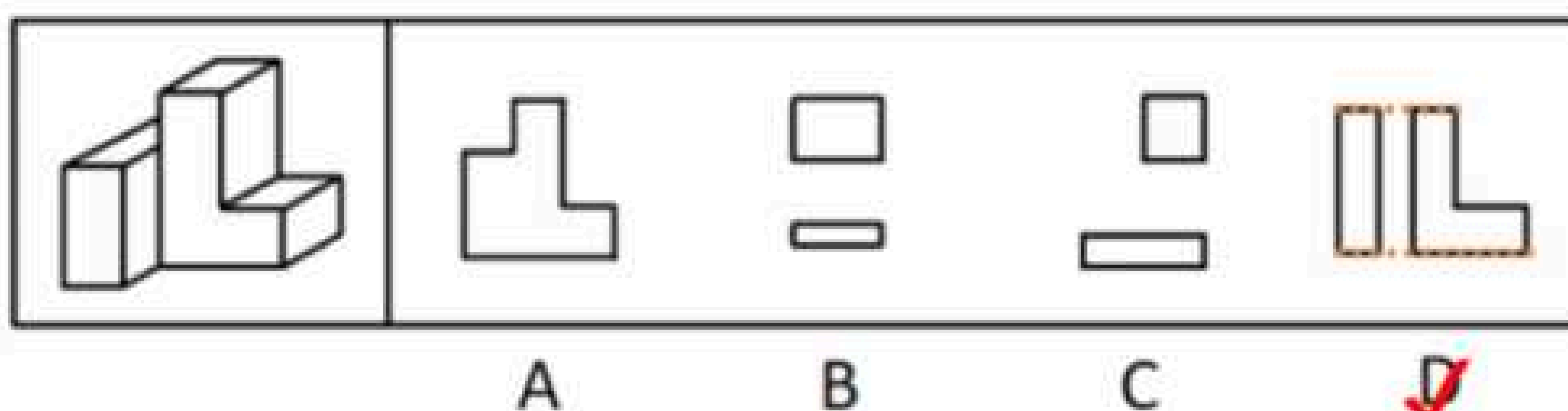
小红书：@贝栗子

13. (22国考-73%) 左图是给定的空心立体图形，将其从任一面对剖开，右边哪项**可能**是该立体图形的截面？

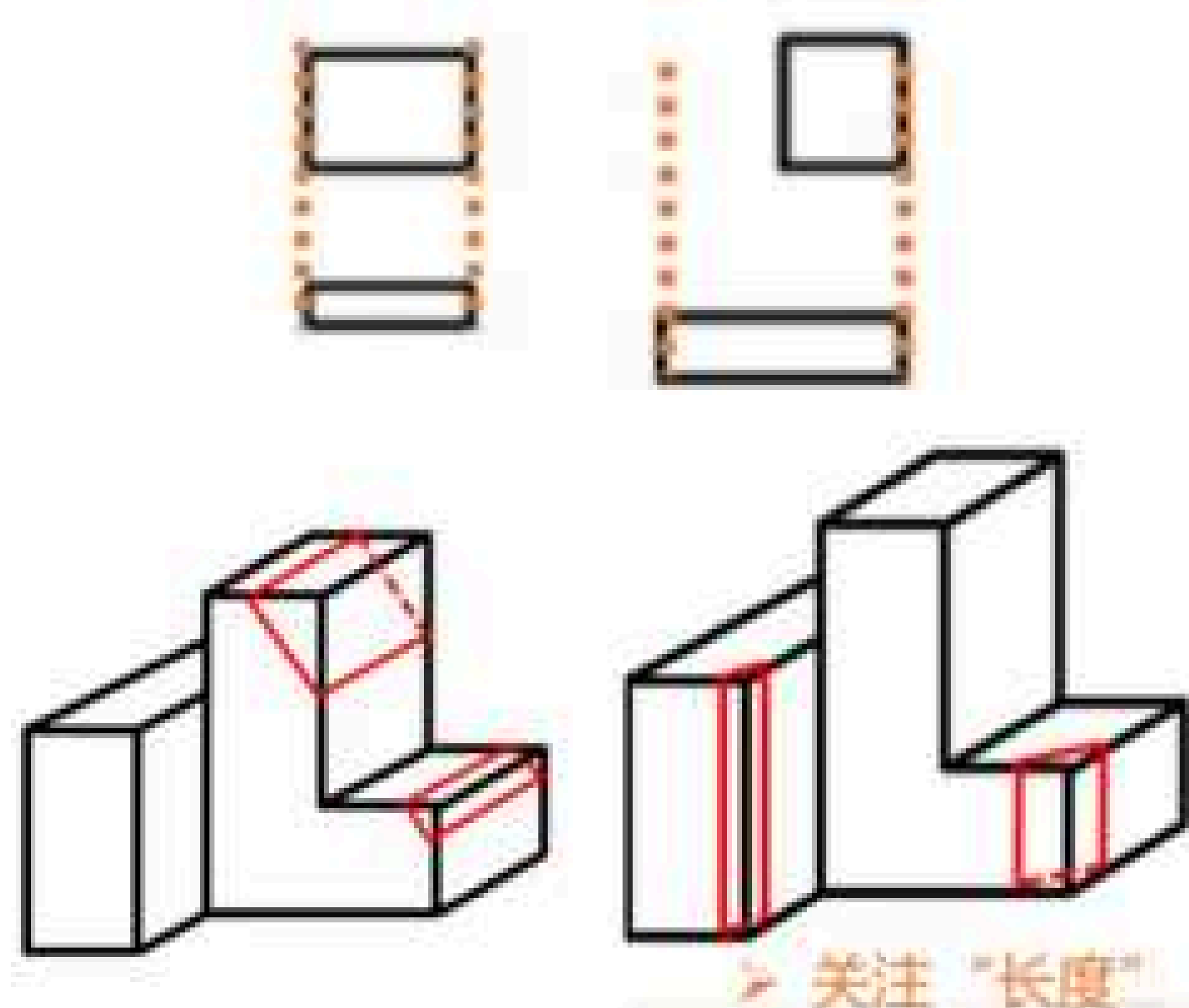
➤ 外轮廓判断切割方向



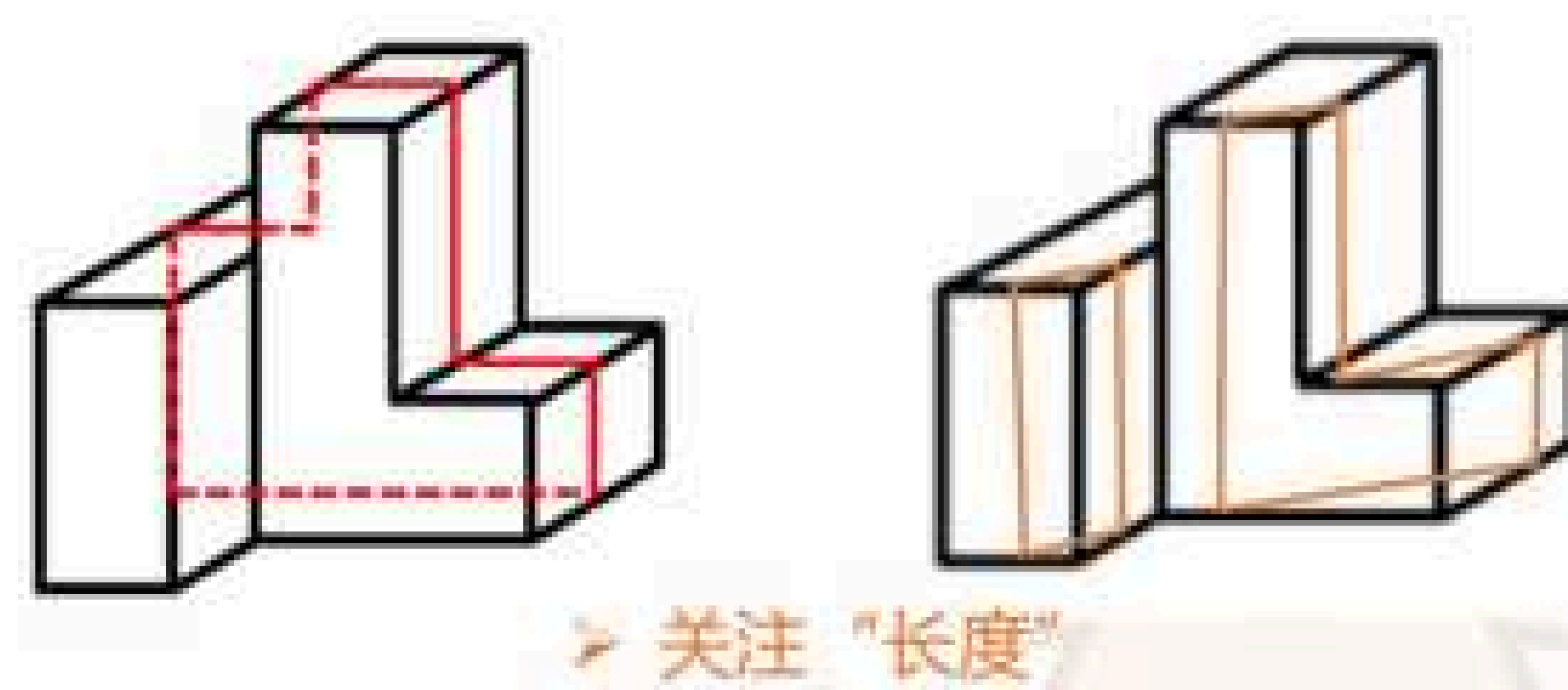
14. (23浙江-64%) 左图为给定的多面体，将其从任一面对剖开，哪项**不可能**是该多面体的截面？



➤ 关注“长度”



➤ 关注“长度”

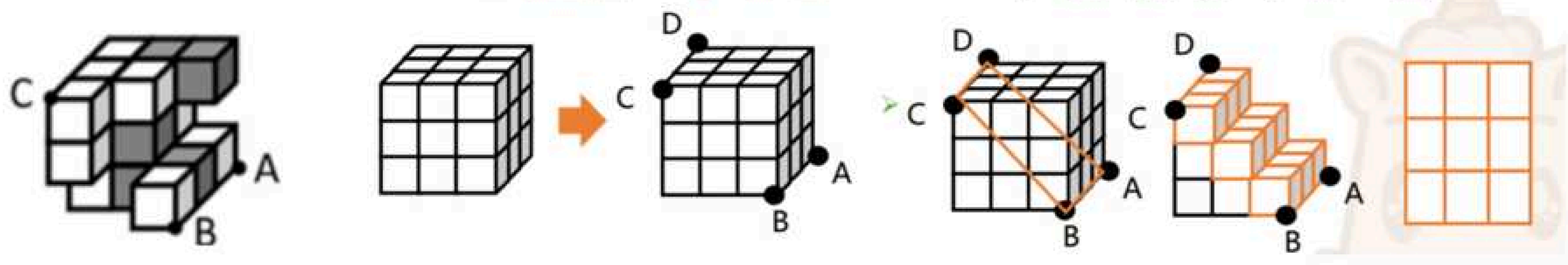


➤ 关注“长度”

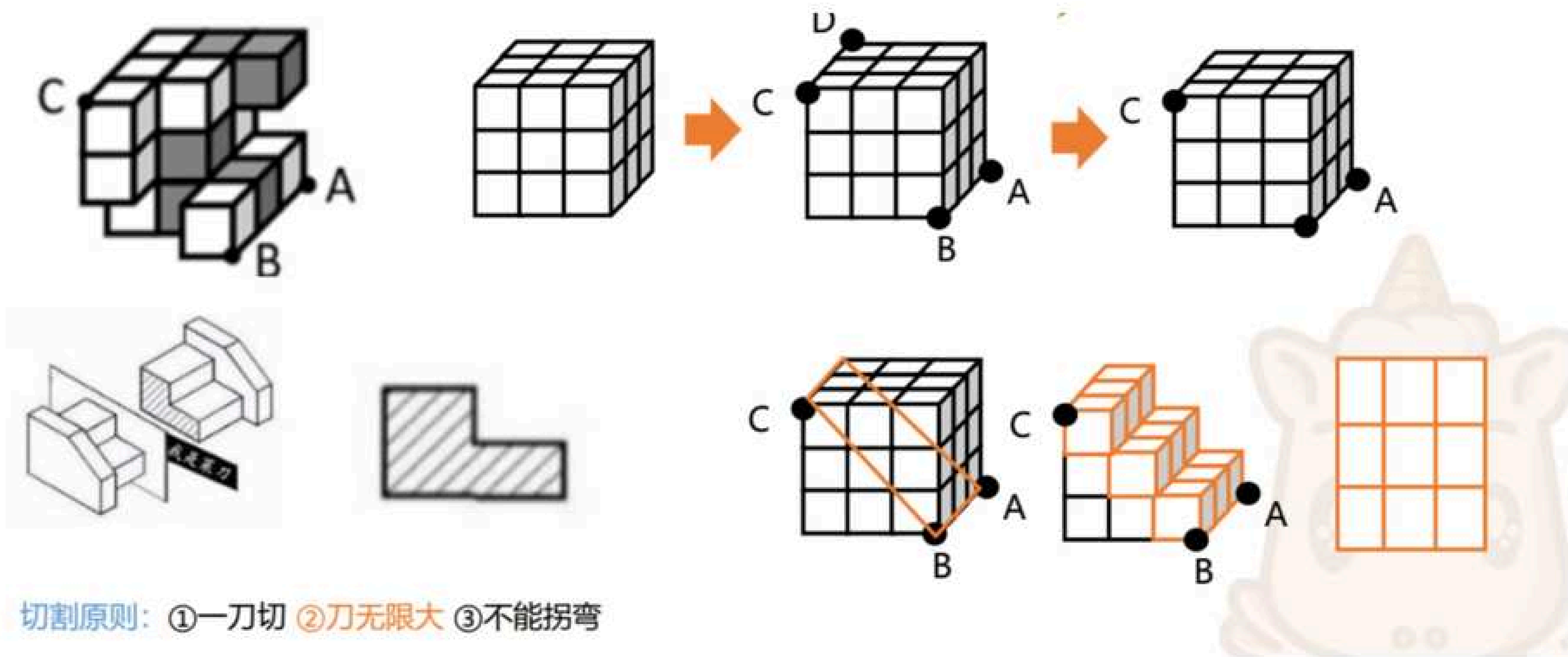
破解出题者“小心思”

➤ 出题者“小心思”

不直接告诉你“斜切”



少了一个点,切割会变化吗? --不会

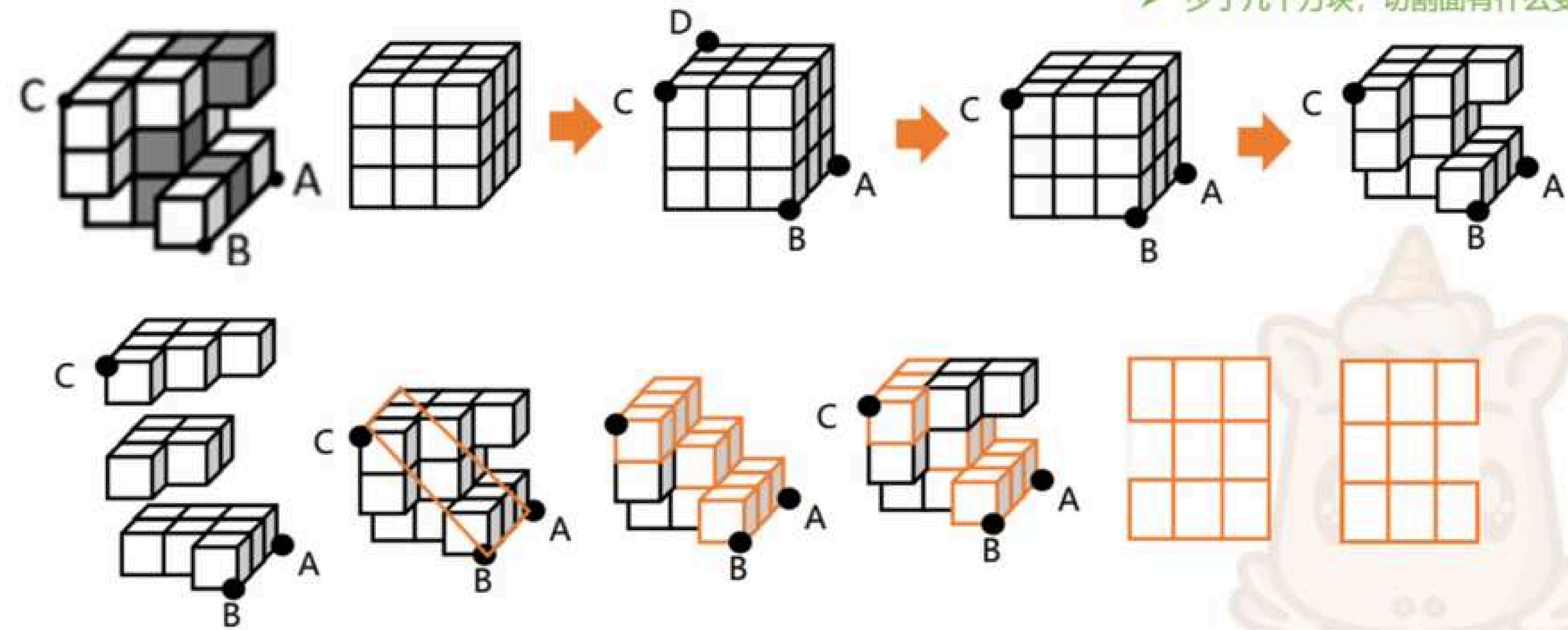


➤ 切割原则: ①一刀切 ②刀无限大 ③不能拐弯

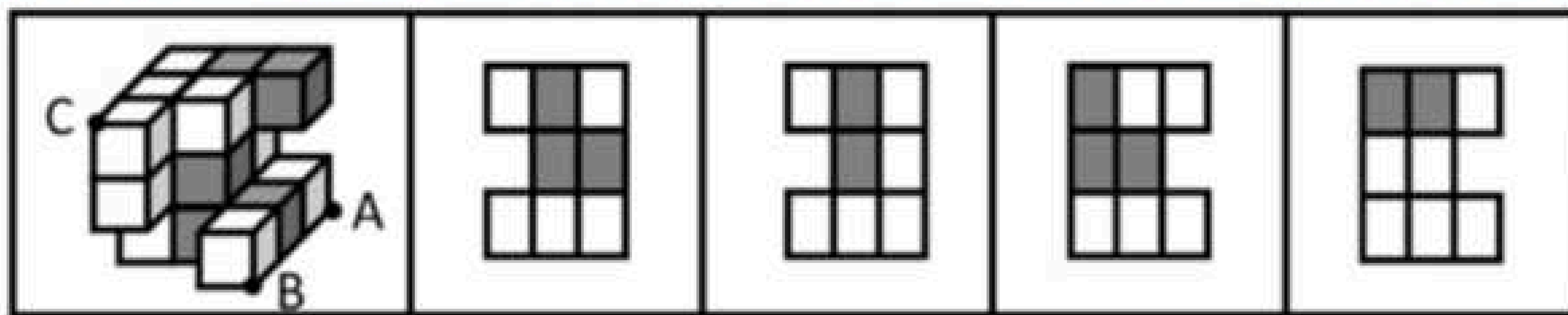
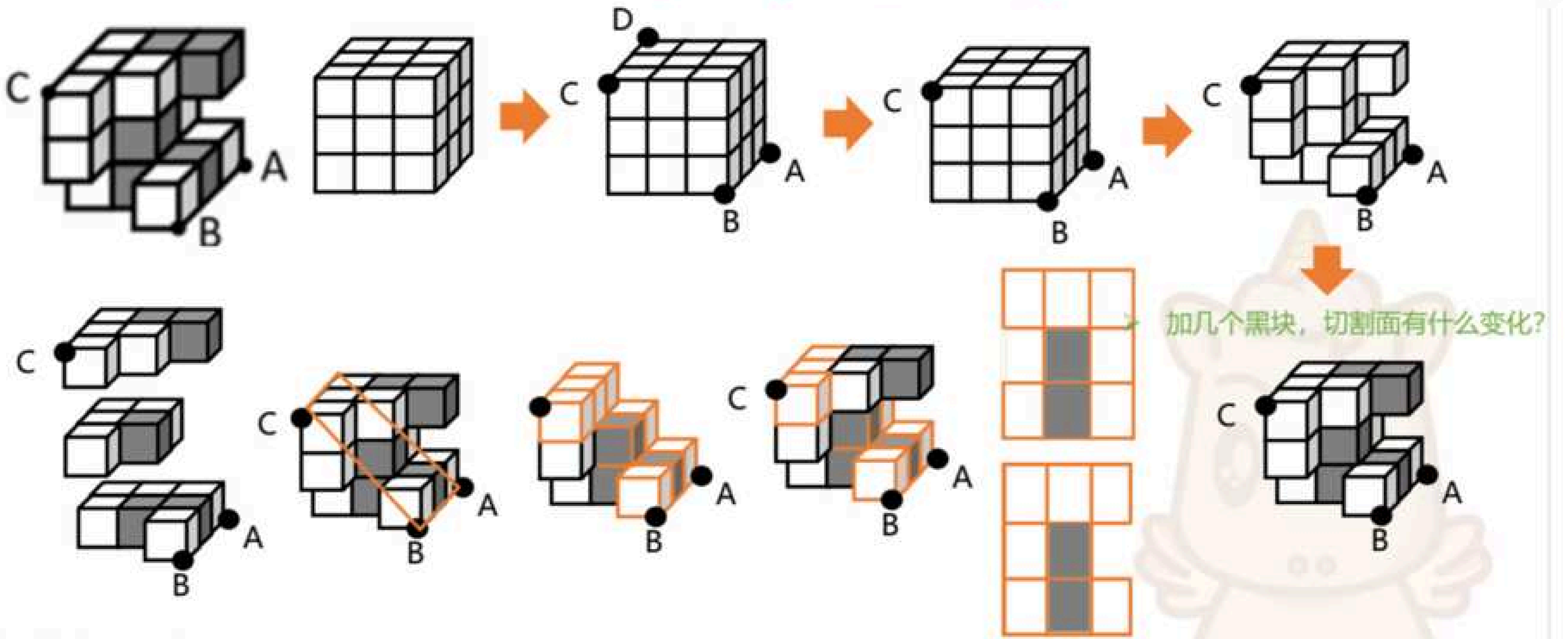
少了几个方块,切割面有什么变化?

➤ 出题者“小心思”

➤ 少了几个方块,切割面有什么变化?



加几个黑块, 切割面有什么变化?



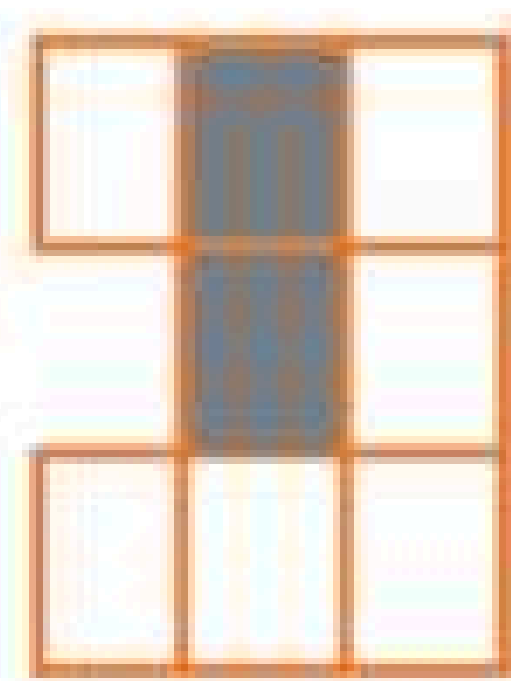
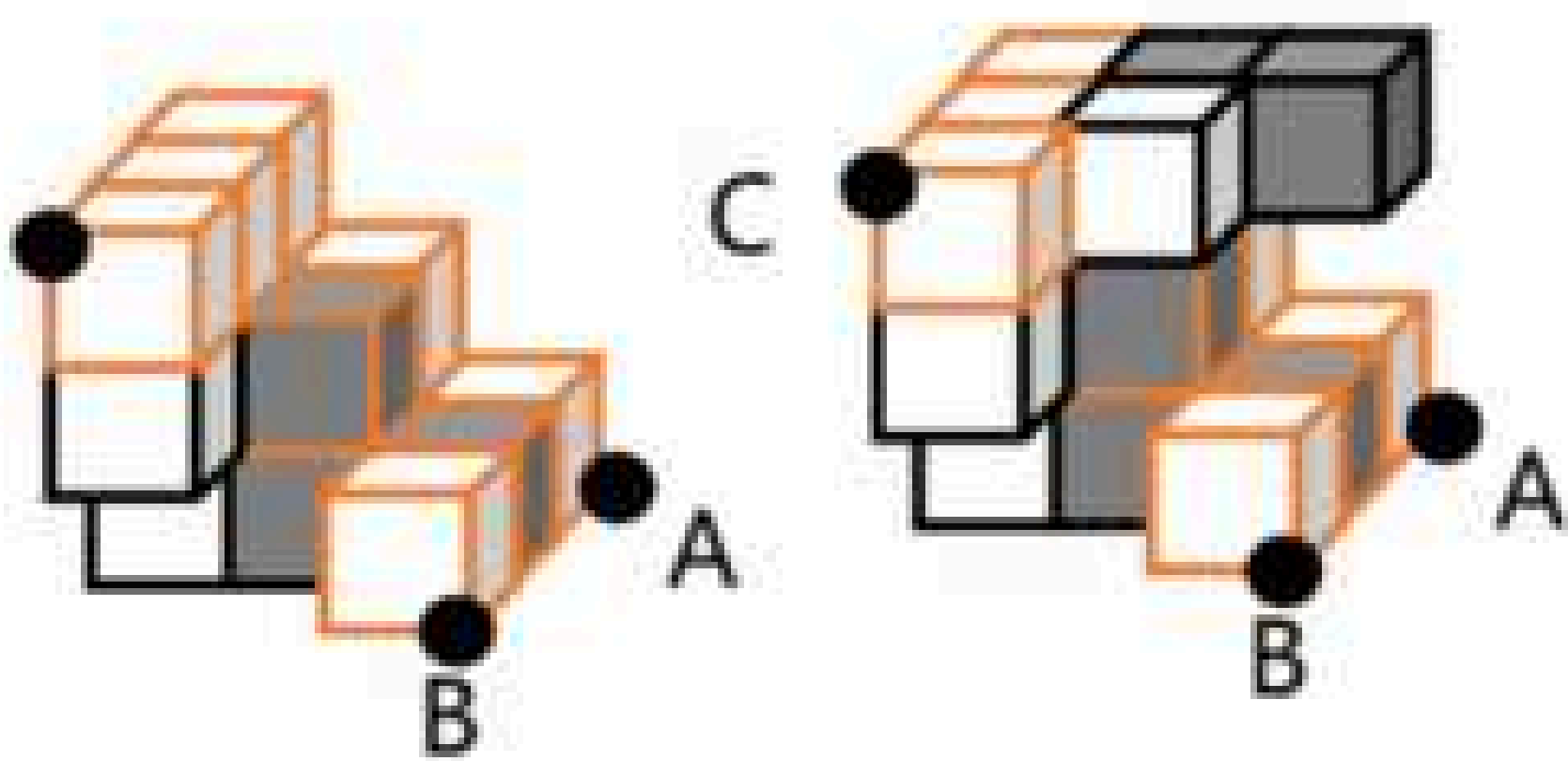
下阶梯法

A

B

C

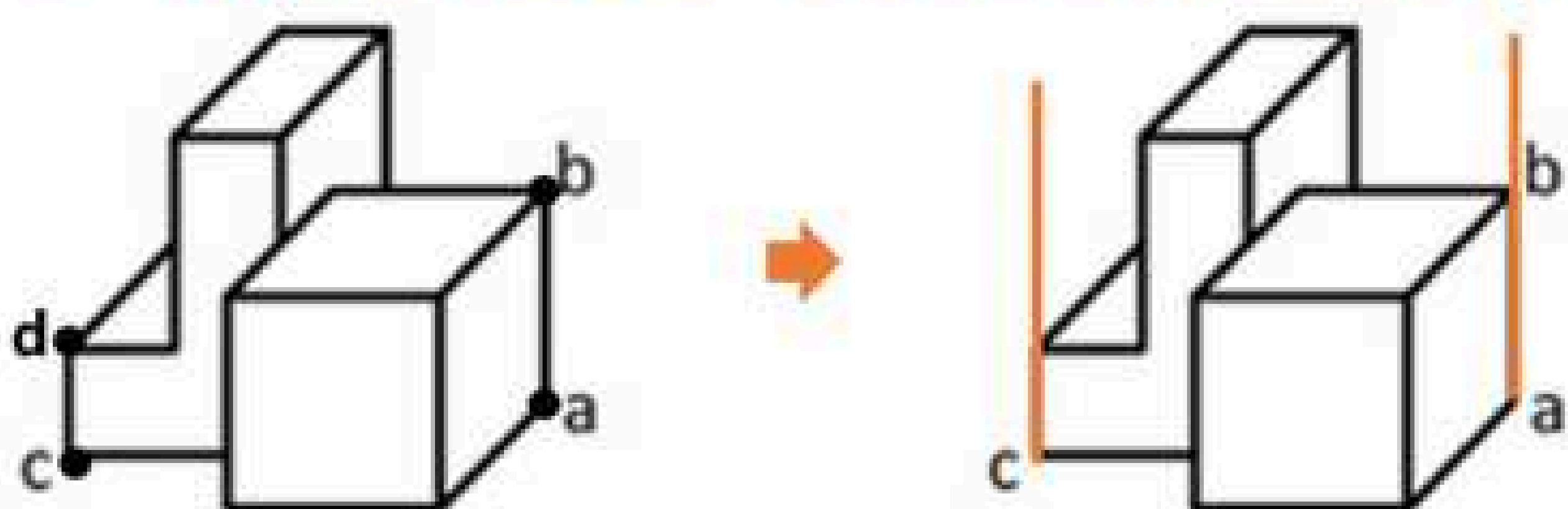
D



- > 每排个数
- > 每排颜色

> 思路总结

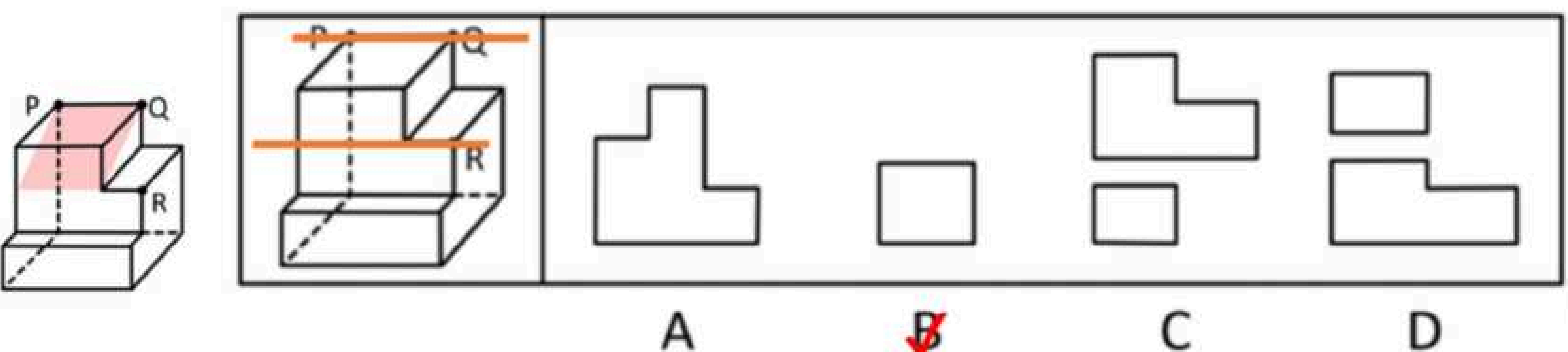
三点斜切: 先连接两点再画平行线



> 解密: 连接ab, 再通过c画ab的平行线

20. (25国考-36%) 左边为给定的多面体, 现用经P、Q、R三个顶点的平面对其进行切割, 问哪个选项是其切面?

> 解密: 连接PQ, 再通过R画PQ的平行线

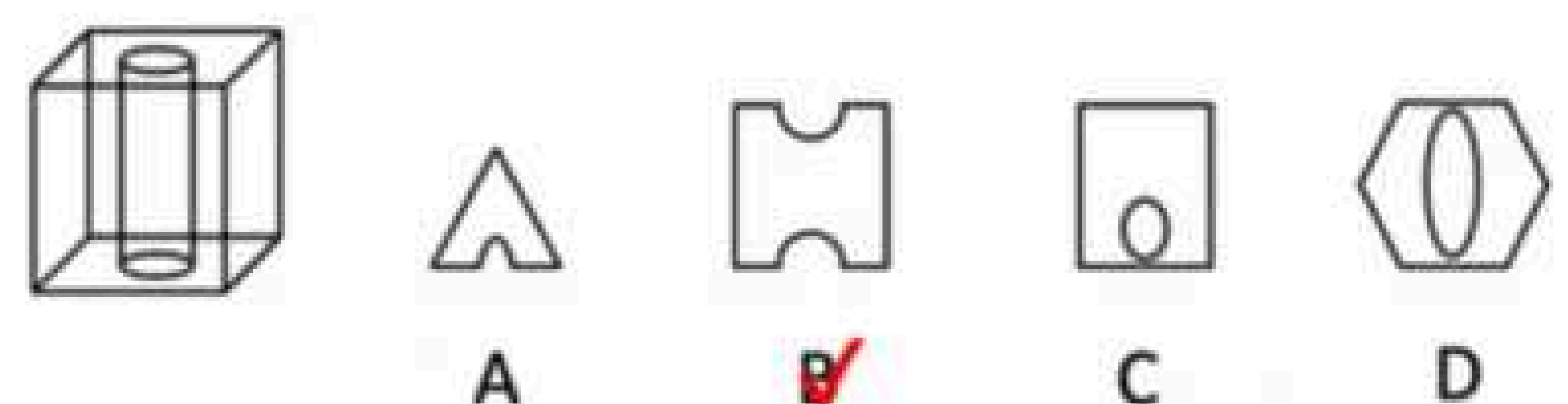
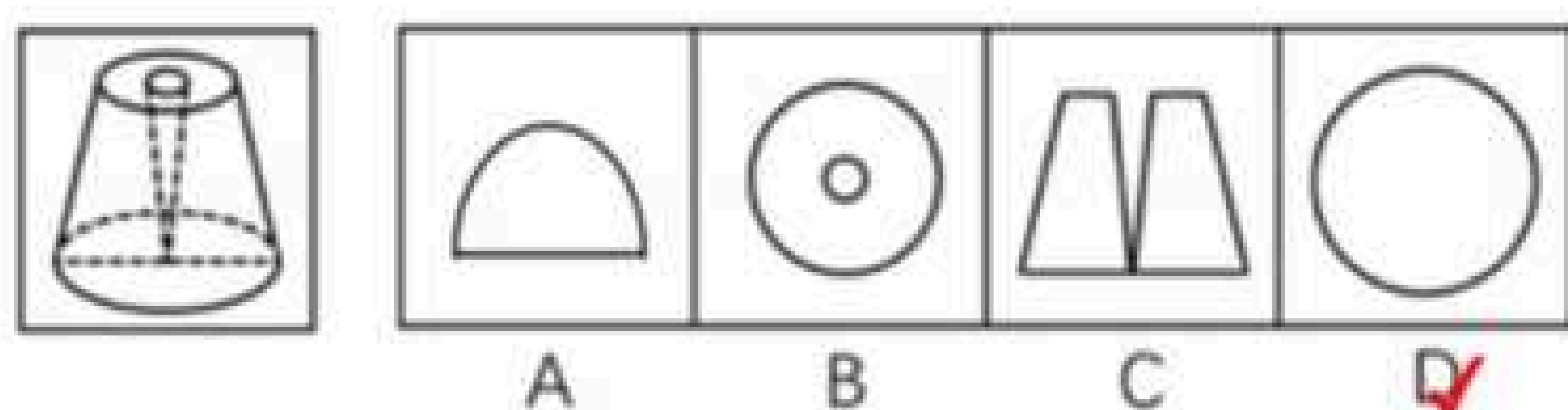
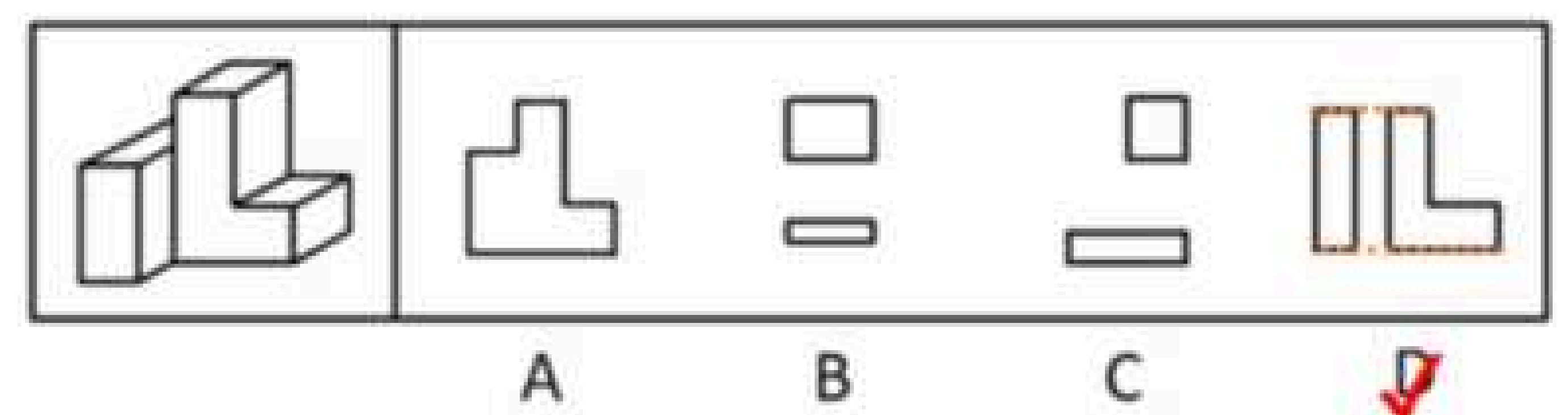
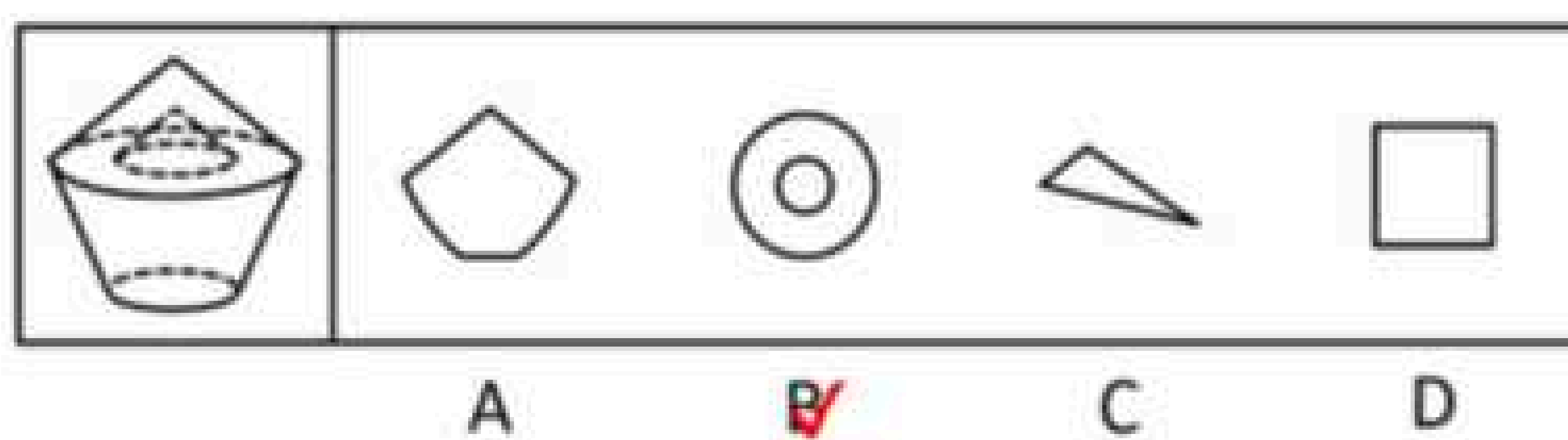
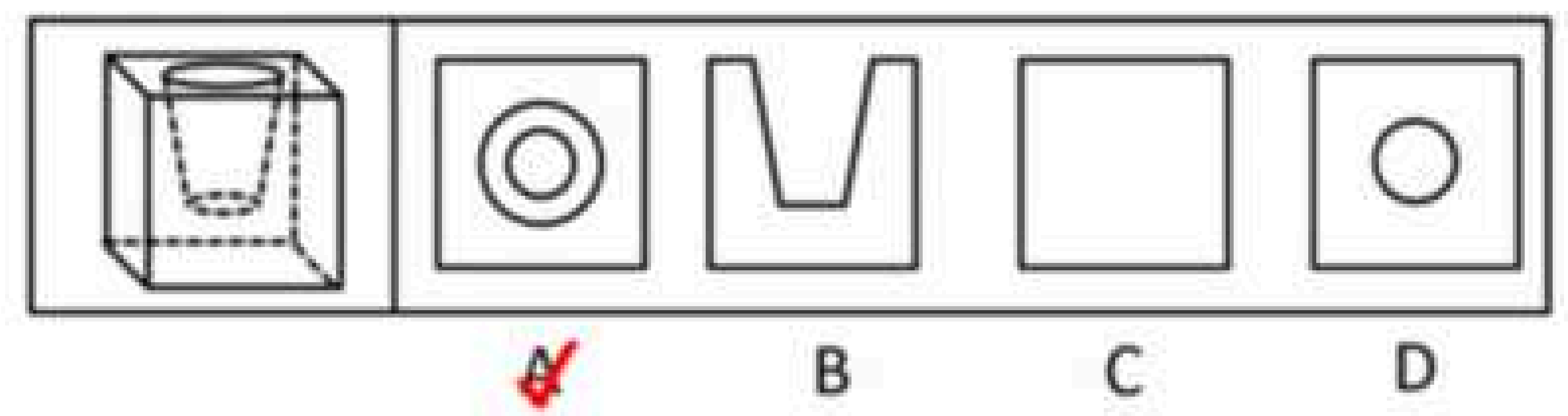
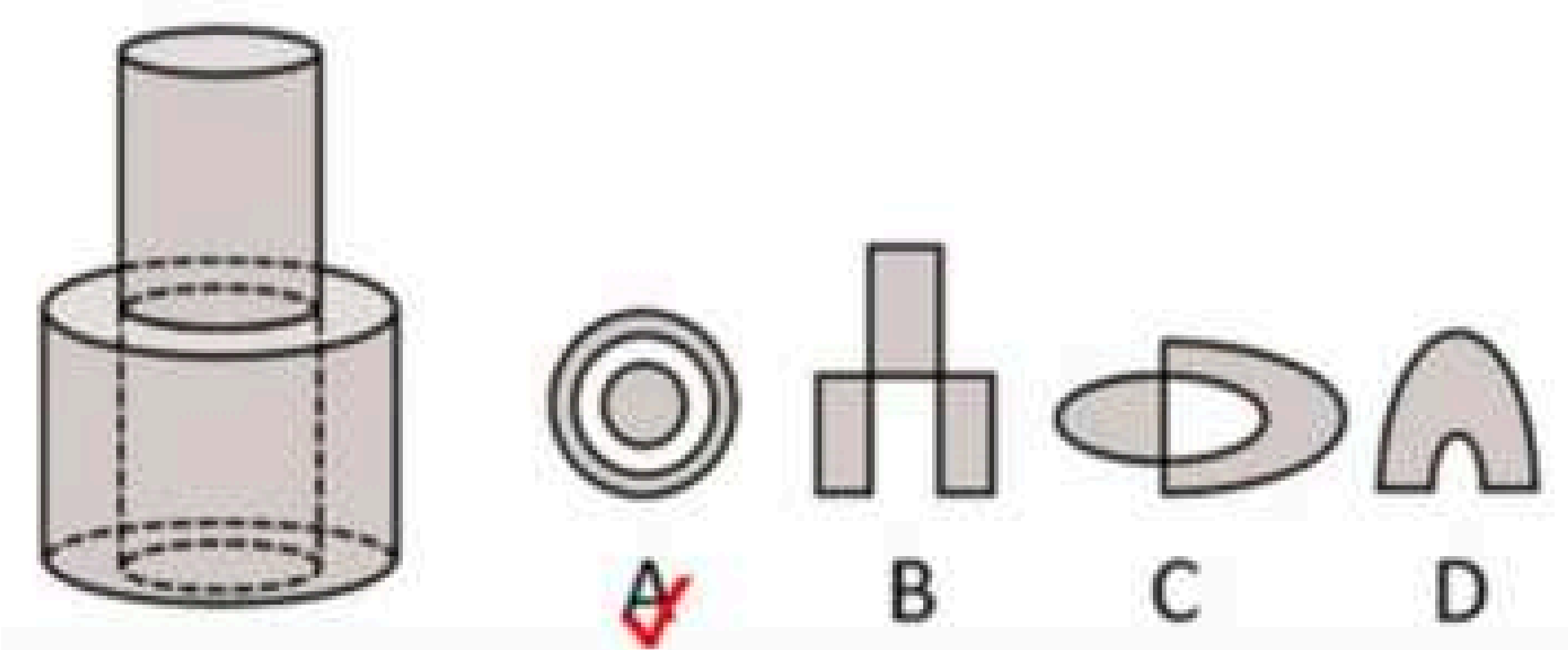


立体空间--截面小结

2. 截面

➤ 截面-小结 ➤ 外轮廓判断切割方向

➤ 复杂立体 → 常见立体图形

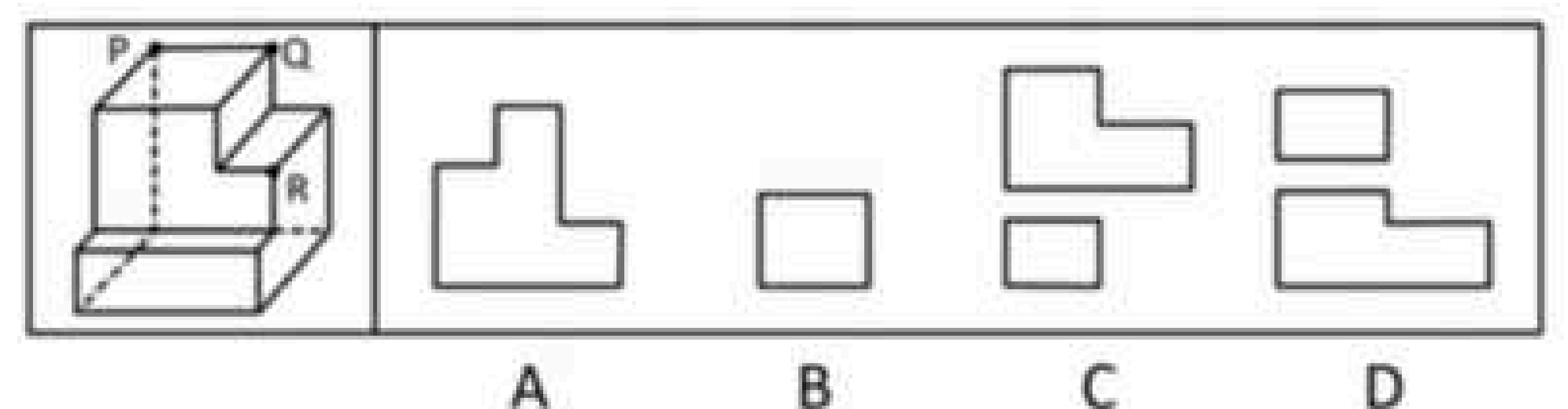
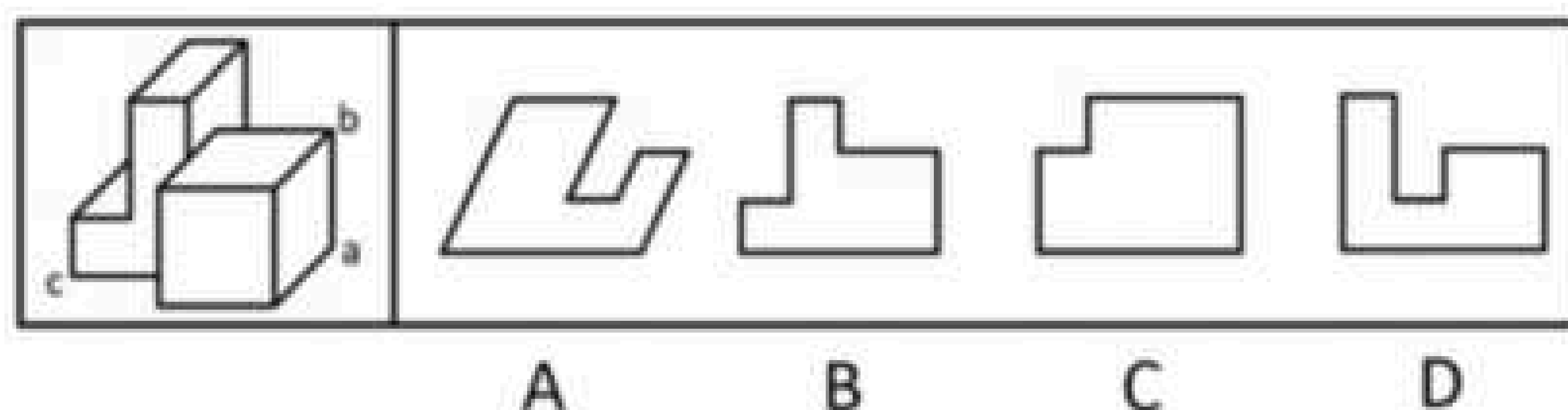
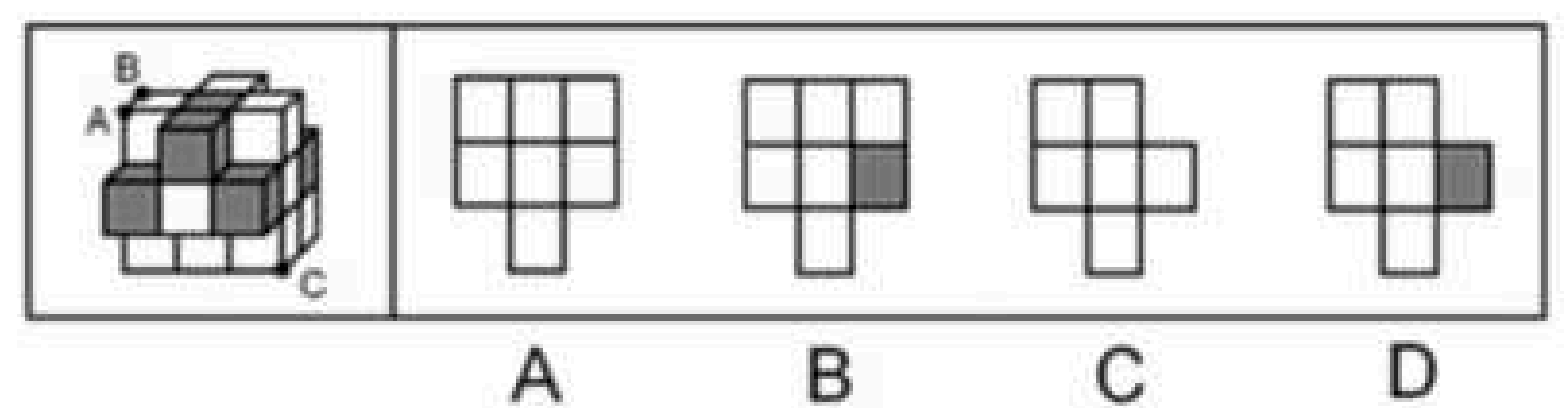
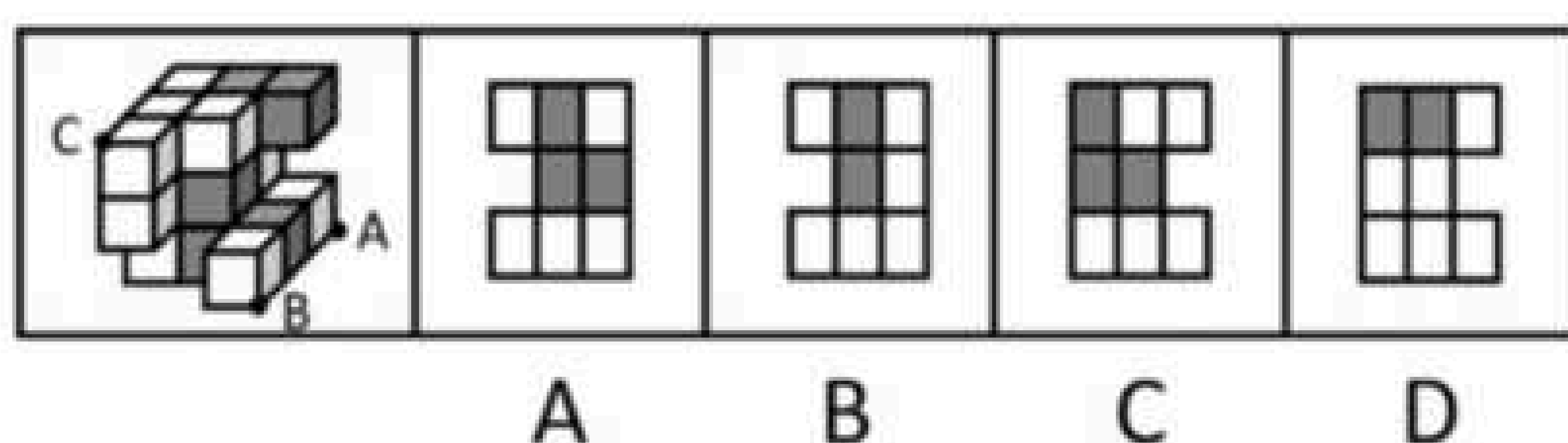


➤ 截面-小结

➤ 切割原则：①一刀切 ②刀无限大 ③不能拐弯

小红书：@贝栗子

➤ 考试新趋势：3点确定一个面



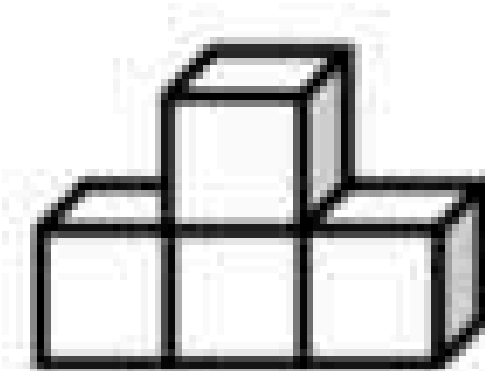


第八节：空间：立体拼合

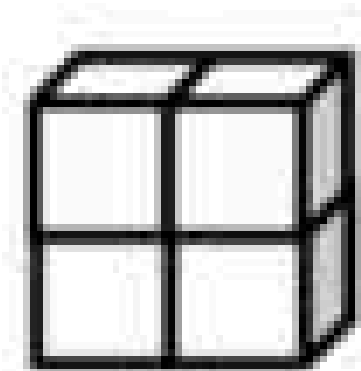
立体拼合-常规

看选项,选方法 > 速记口诀：①个数 ②层数 ③特殊

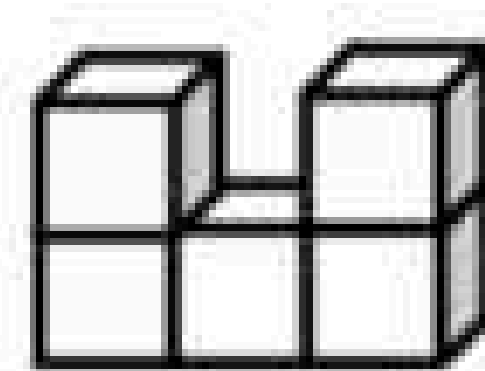
1.选项个数有差别,优先考虑数个数



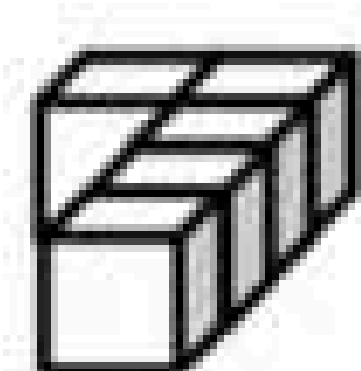
A



B



C

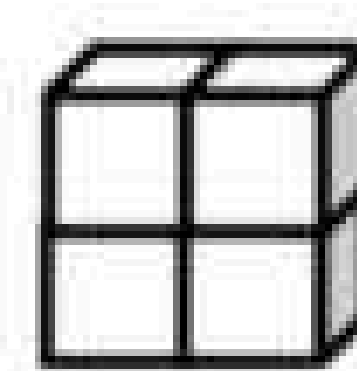


D

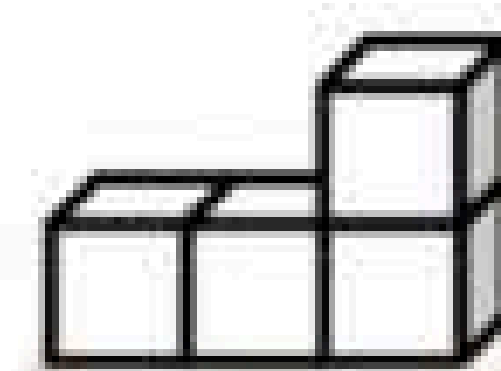
> 打算猜,可以数。打算做,先不数。



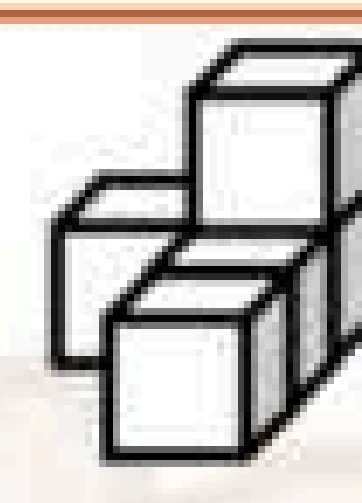
A



B



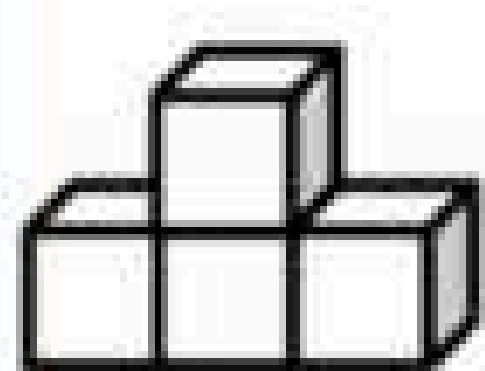
C



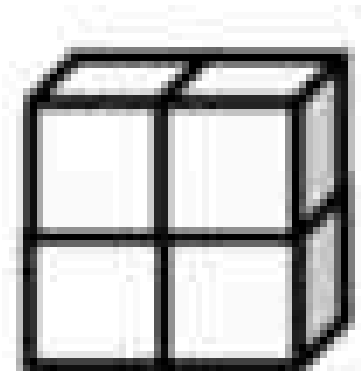
D

> 选项3个一致,尽量不数。

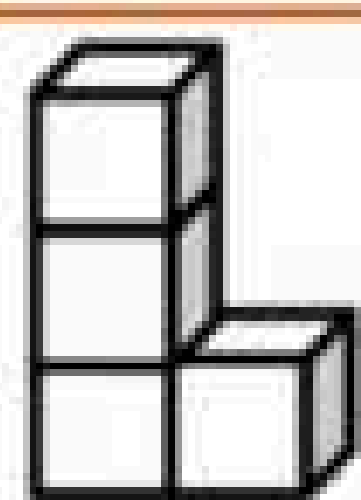
2.选项分层明显或每层个数不一样,优先考虑分层拼/分层数



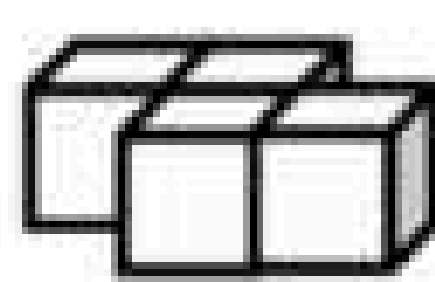
A



B



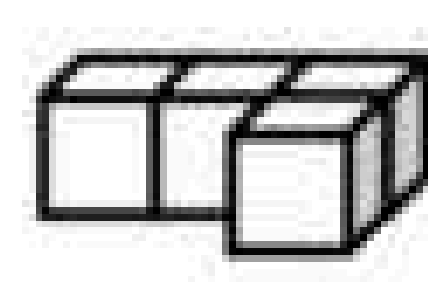
C



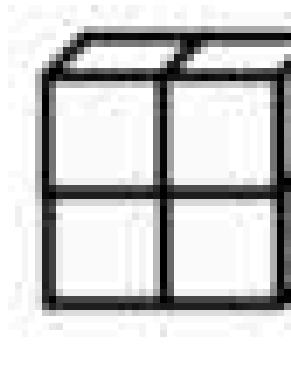
D

> 每层个数不一样,数层数性价比最高

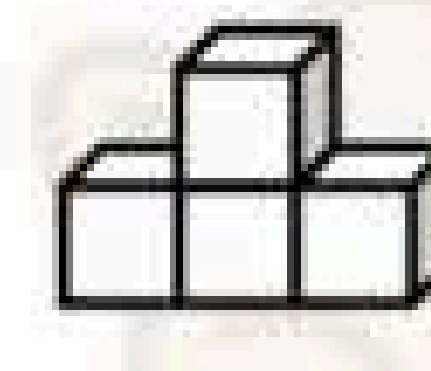
> 数每层个数,优先考虑不旋转的情况



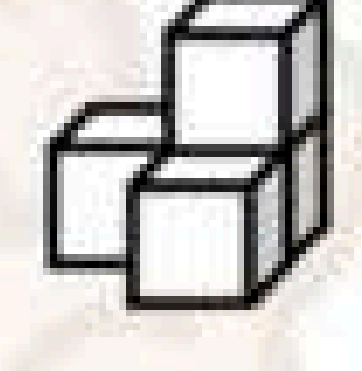
A



B



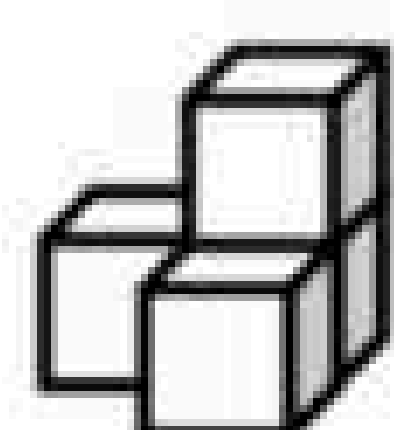
C



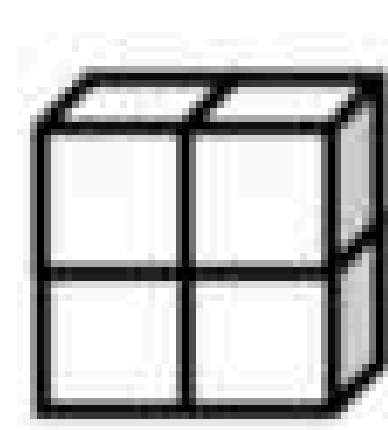
D

> 每层个数一致的选项,正确可能性更高

3.考虑找特殊,即找题干中最大或抽象的方块,优先代入

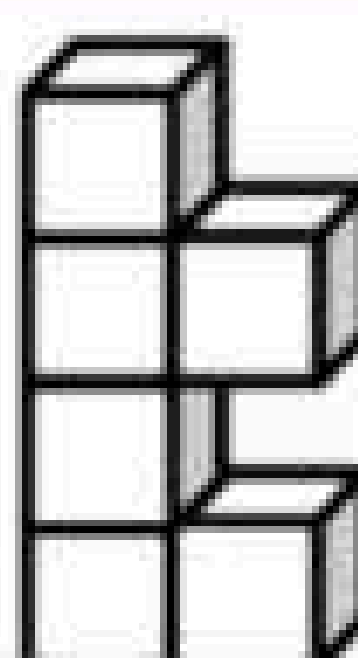


①



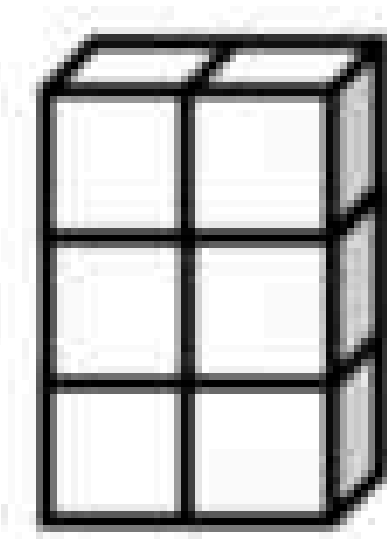
②

> ①抽象

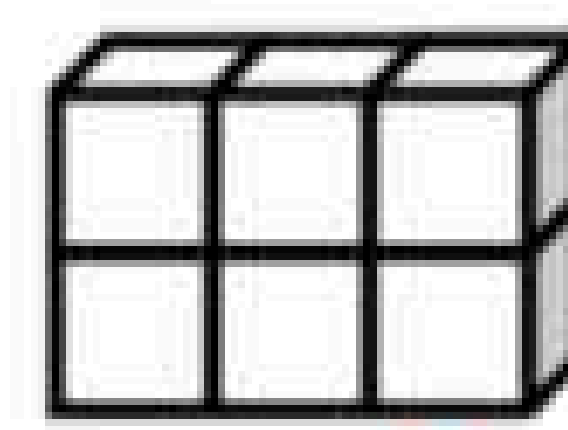


①

> ①抽象

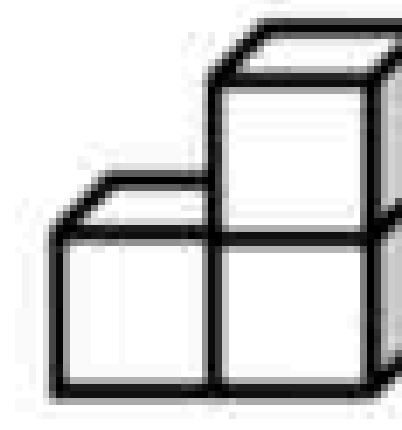


②



①

> ①最大

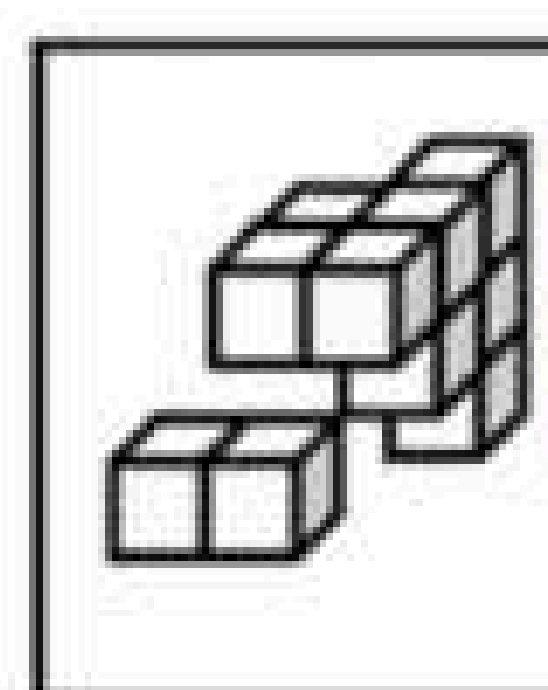
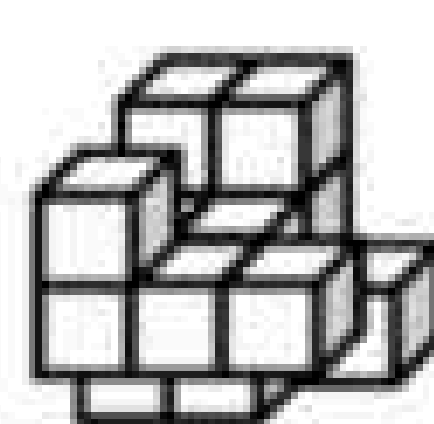


②

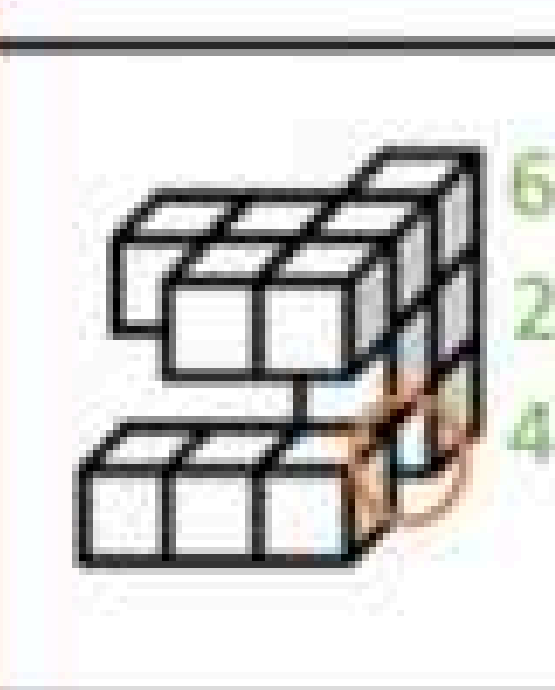
> 题干中,越大或越抽象的方块,位置的局限性越大

例题

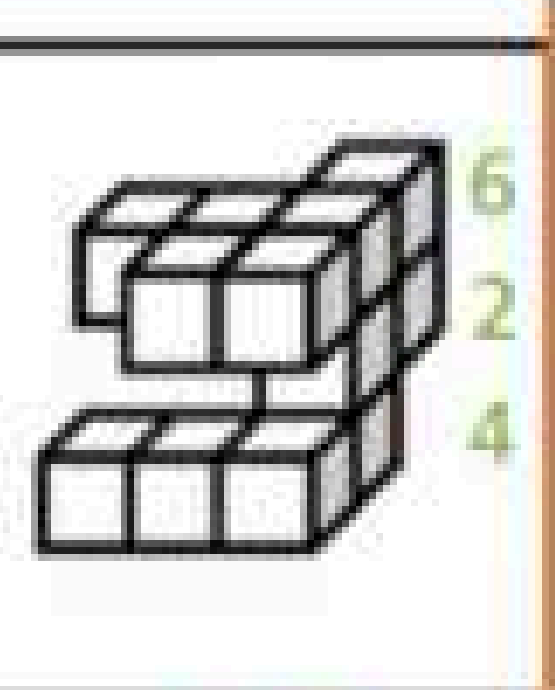
下列选项中,能与所给图形组合成立方体的是。



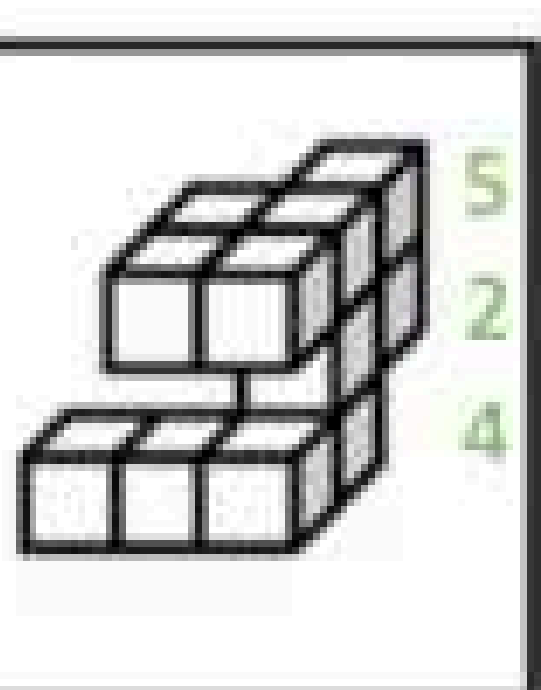
A



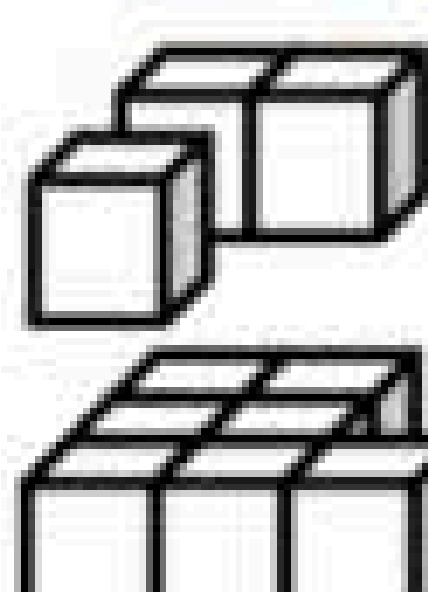
B



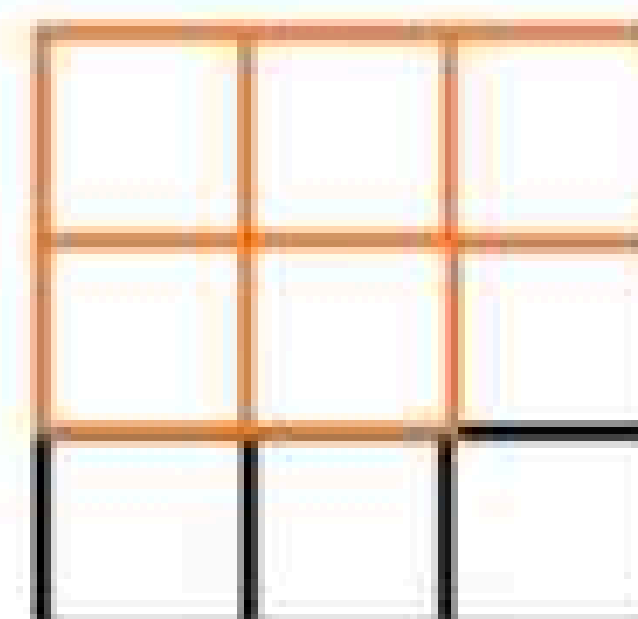
C



D



9 3 6
9 7 2
9 5 4



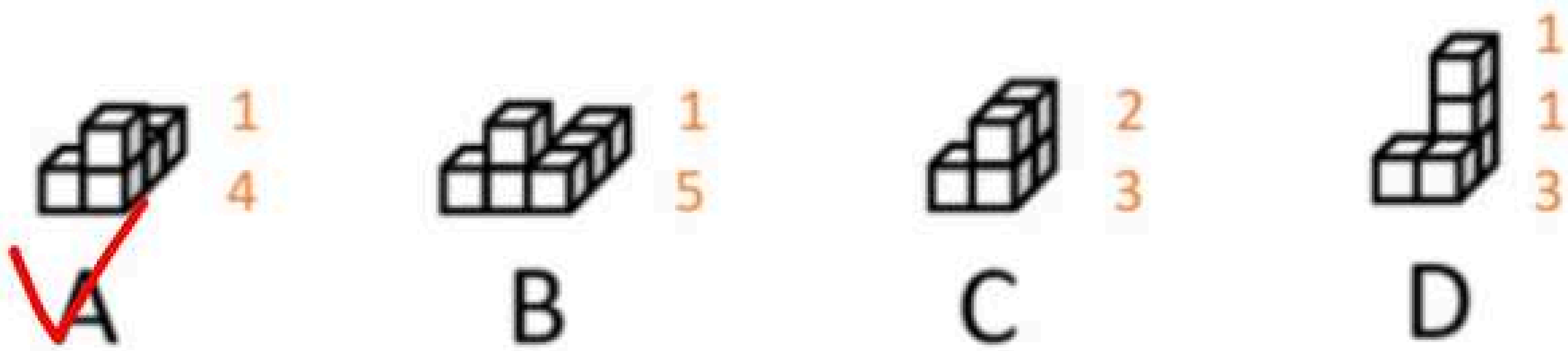
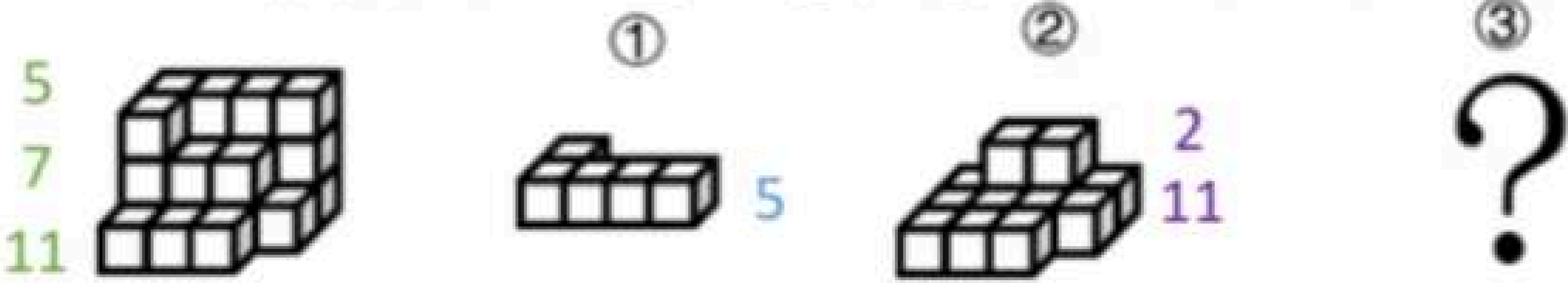
> 转换成平面图

选项分层明显或每层个数不一样,优先考虑分层拼/分层数

技巧性:

优先考虑不旋转的情况

左边的立体图形是由①、②和③组成的，下列哪项可以填入问号处？

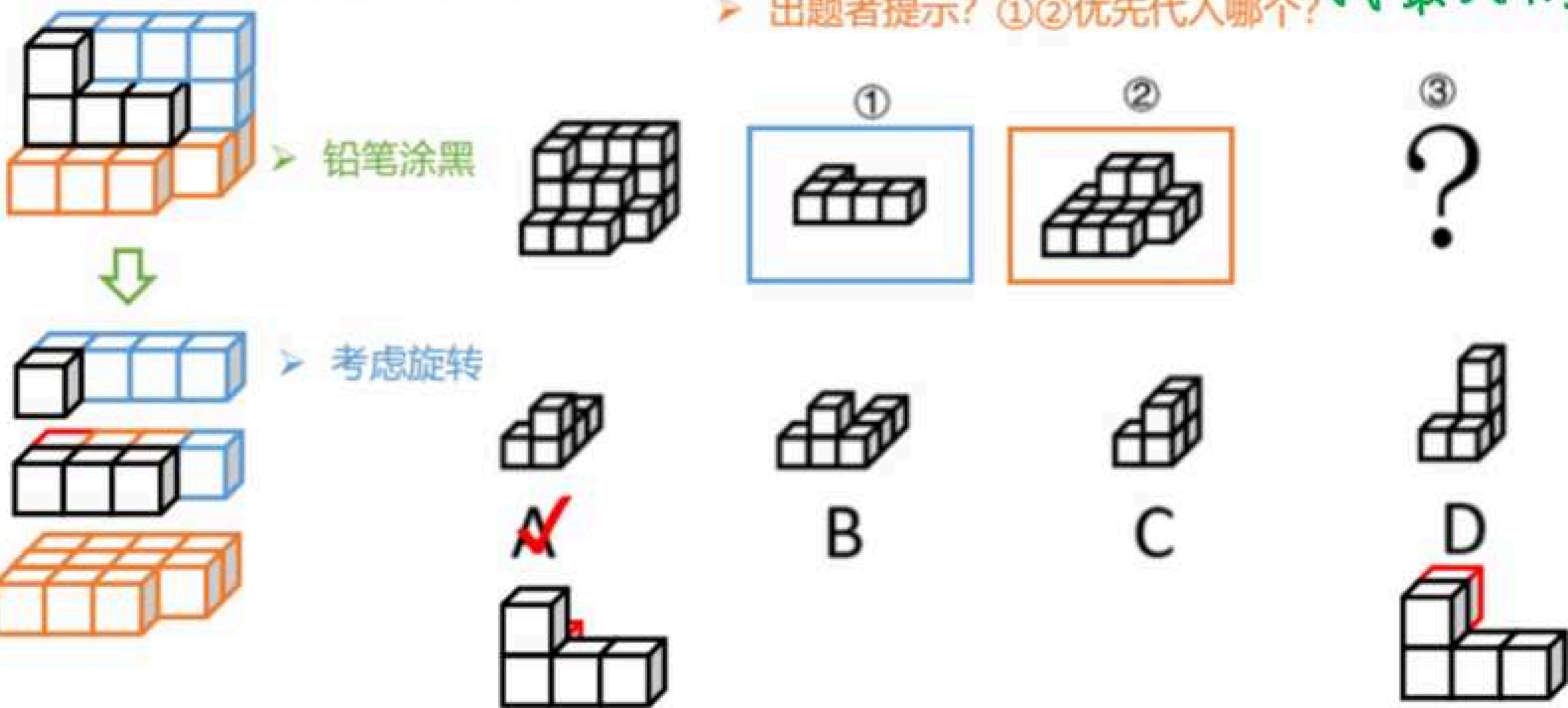


小红书：@贝栗子

每层个数不一样，数层数性价比最高 > 合理凑数，优先大的（局限性大）

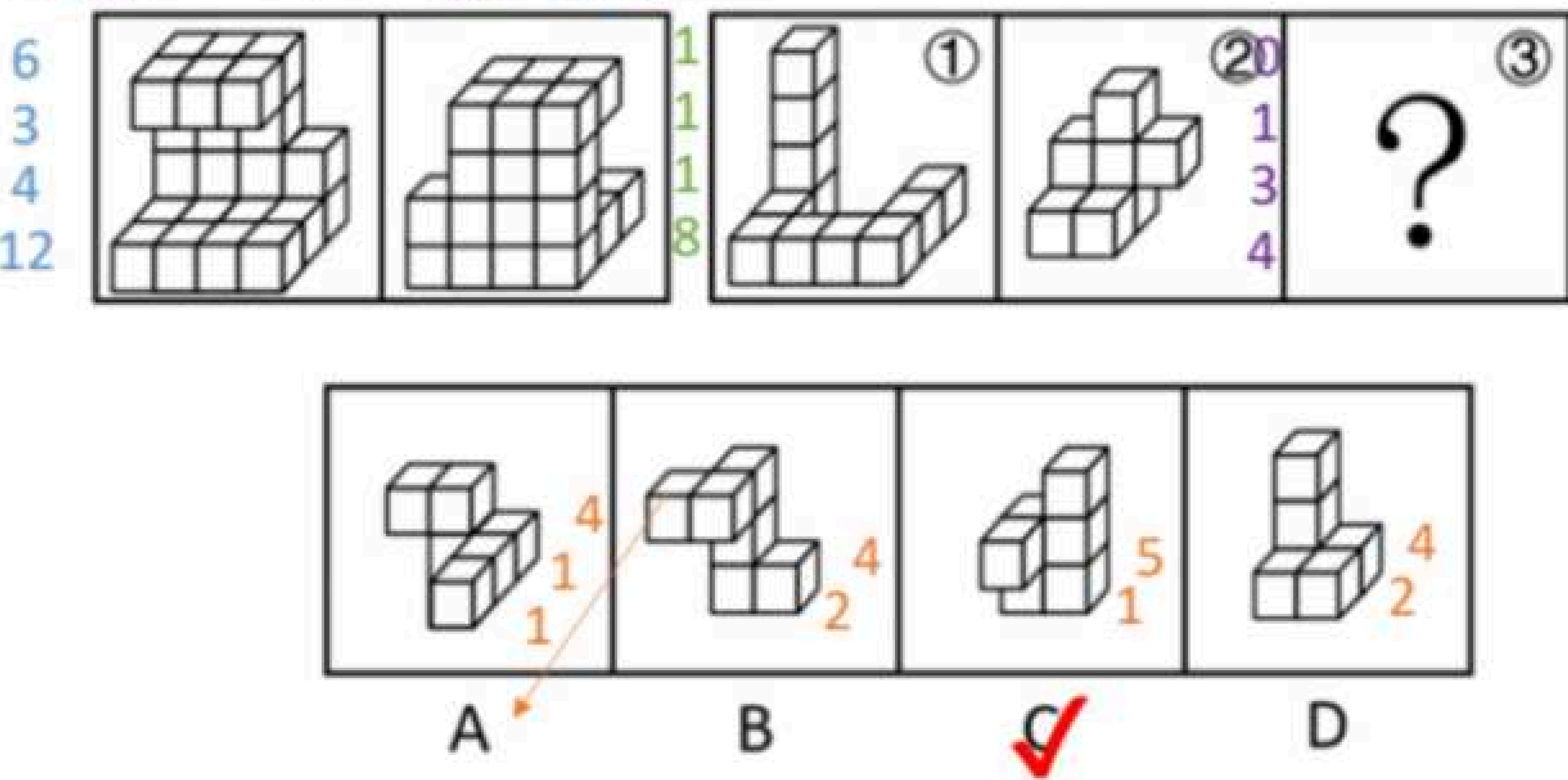
找最大或抽象的方块:

> 出题者提示？①②优先代入哪个？找最大的②



找最大的①
分层数数

找最大或抽象的方块:



技巧性:

①拼凑:

5

7 - 2

11 - 11

= 5

= 5

= 0

优先放大的

5

7

11

①

5

②

2

11

③

?

A

1

4

B

1

5

C

2

3

D

1

1

3

尝试凑数

5

7 - 2

11 - 11

= 5

= 5

= 0

5

7

11

①

5

②

2

11

③

?

A

1

4

B

1

5

C

2

3

D

没结果,考虑旋转

5

7 - 2

11 - 11

= 5

= 5

= 0

1

4

1

0

5

7

11

①

1

4

②

2

11

③

?

A

1

4

B

1

5

C

2

3

D

1

4

技巧缺陷: D旋转后也会有“4+1”结构

②对比选项排除:

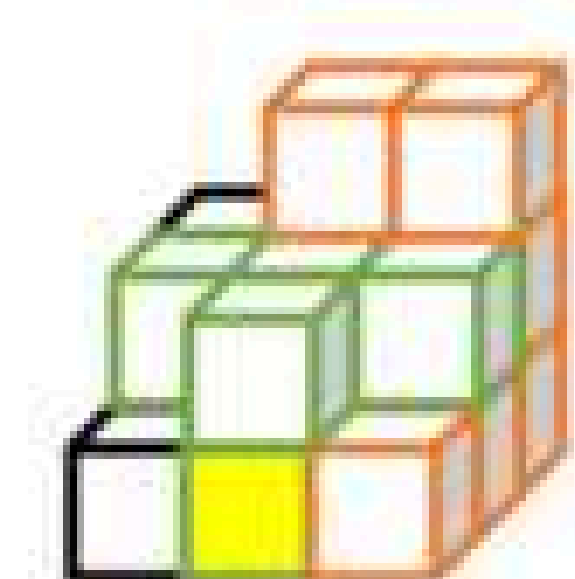


来源于小红书@贝栗子

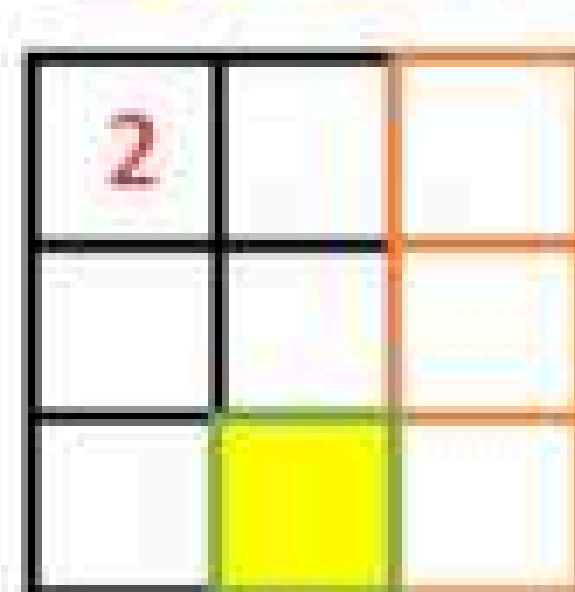
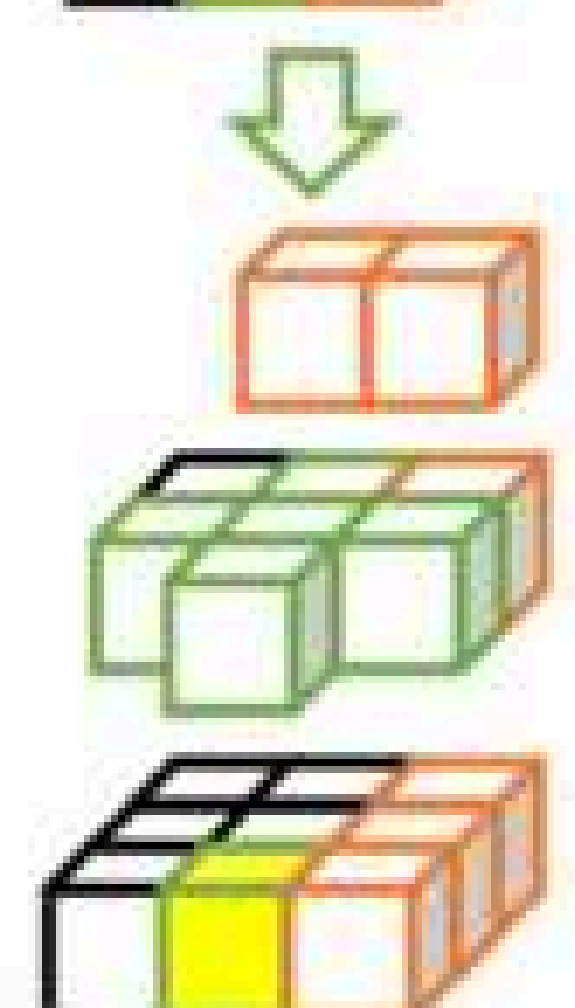
技巧性:

③转换成平面图:

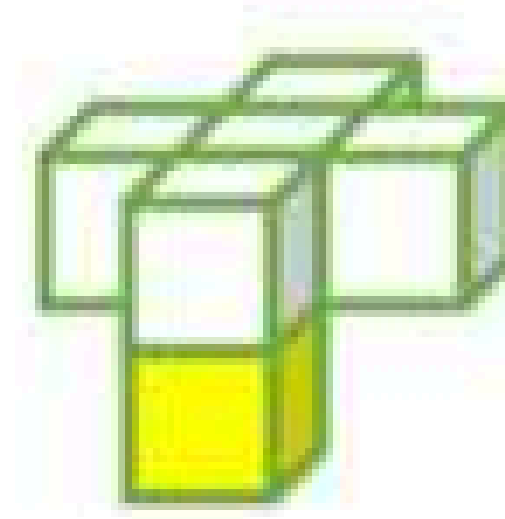
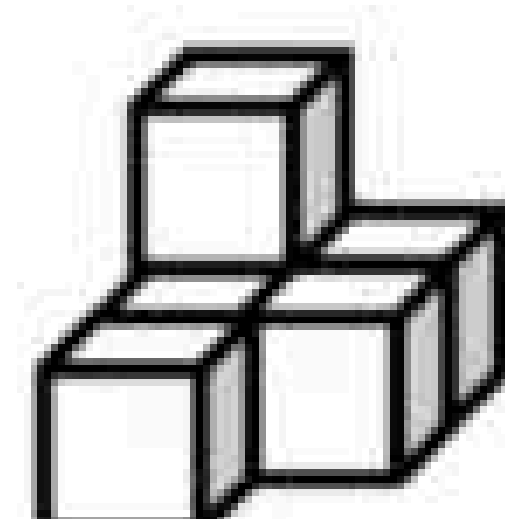
出题者提示? ①②优先代入哪个? ②



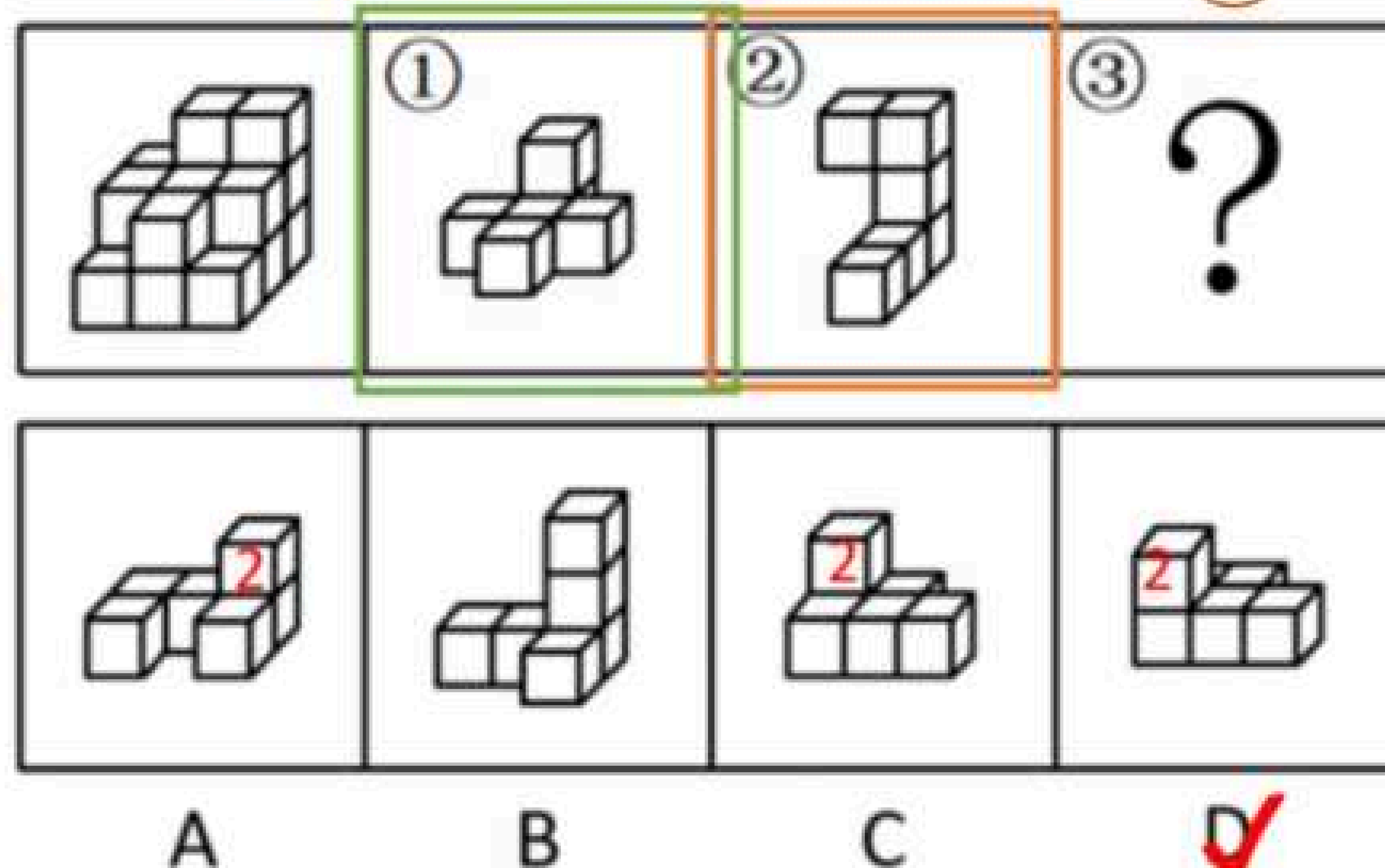
铅笔涂黑



转换成平面图



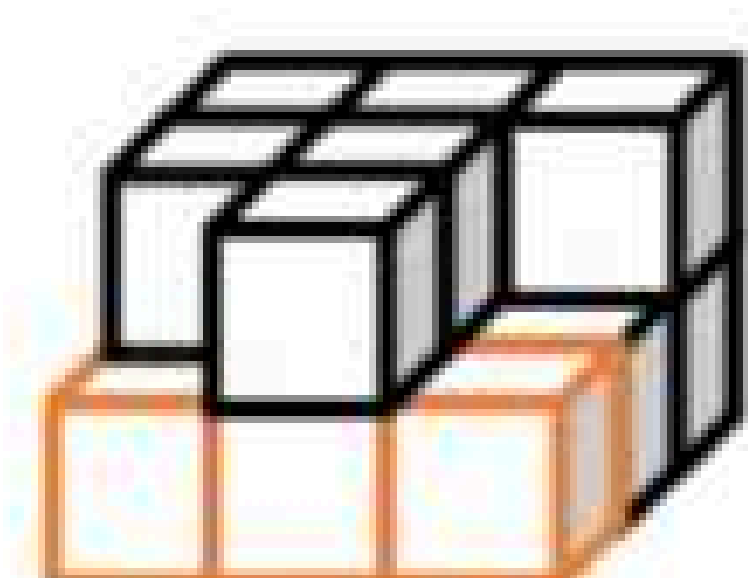
考虑旋转



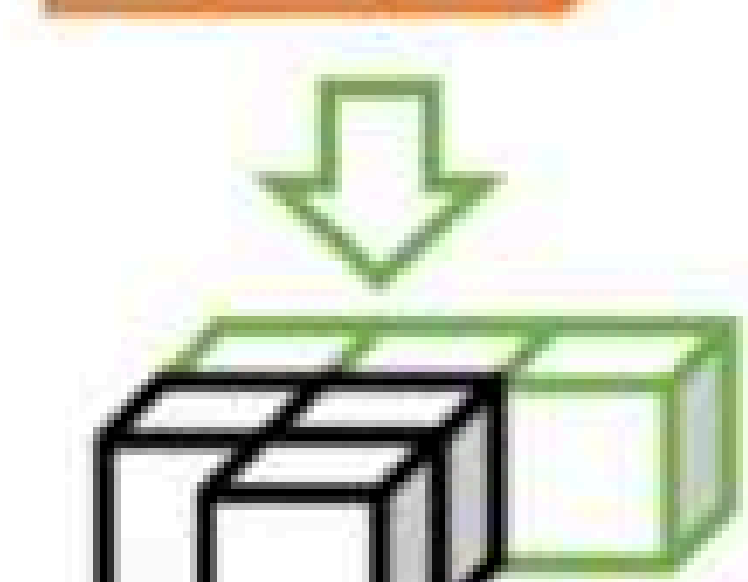
小红书: @贝栗子

④对角一般不选

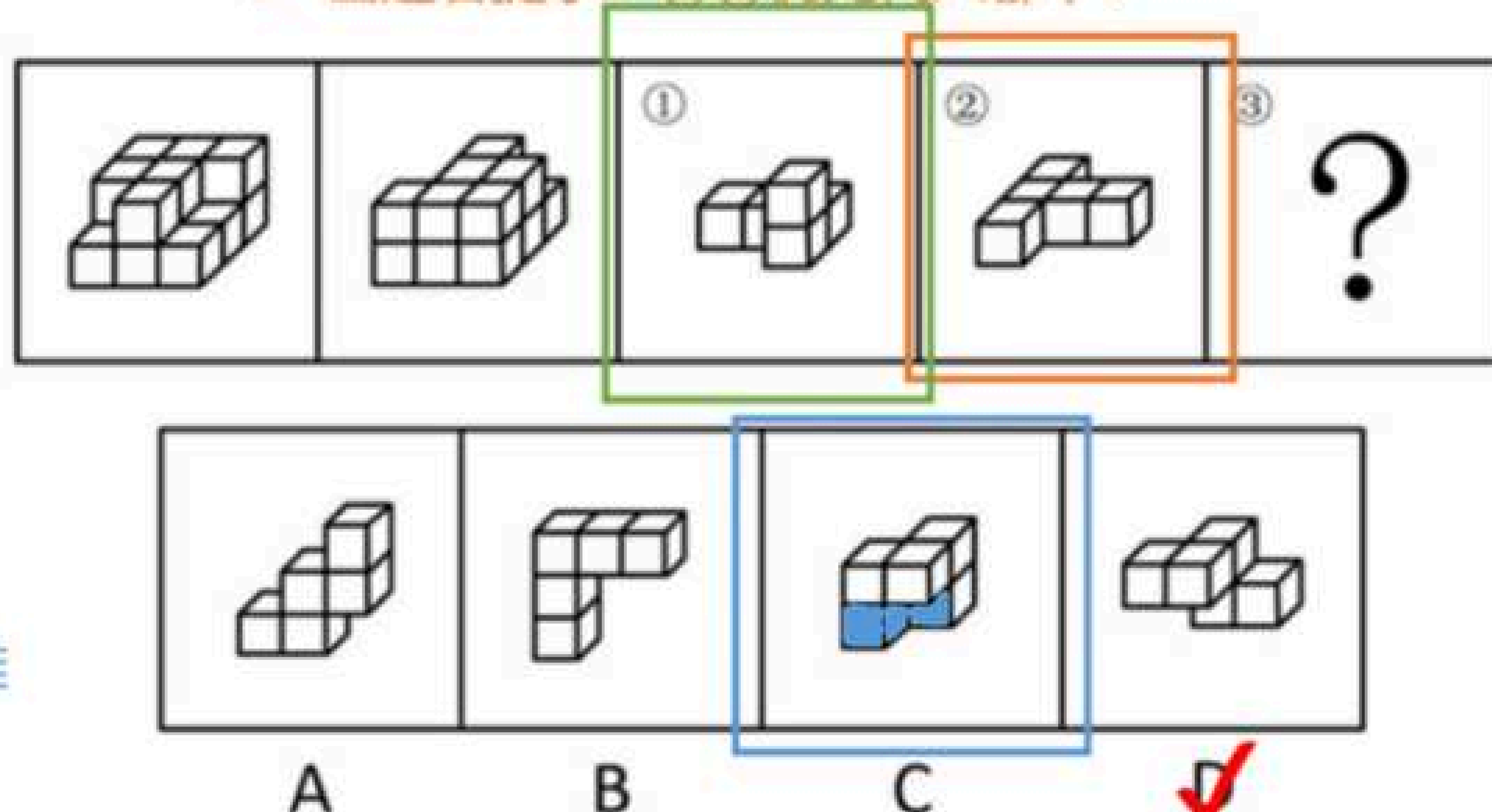
出题者提示? ①②优先代入哪个?



铅笔涂黑

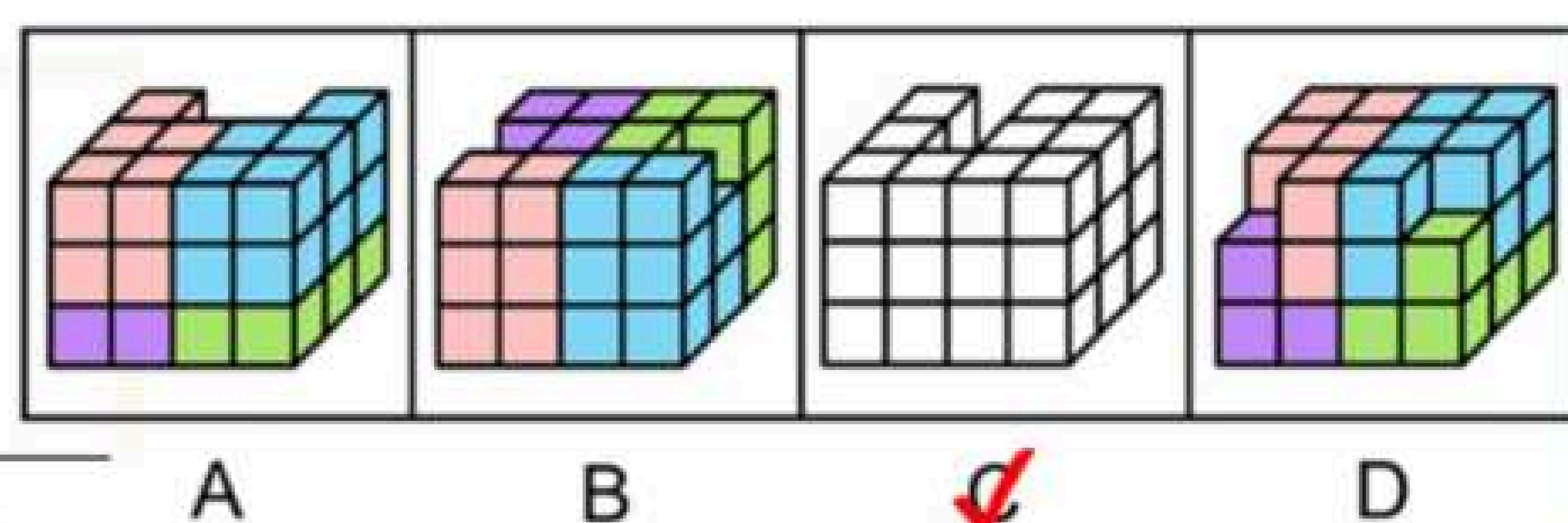
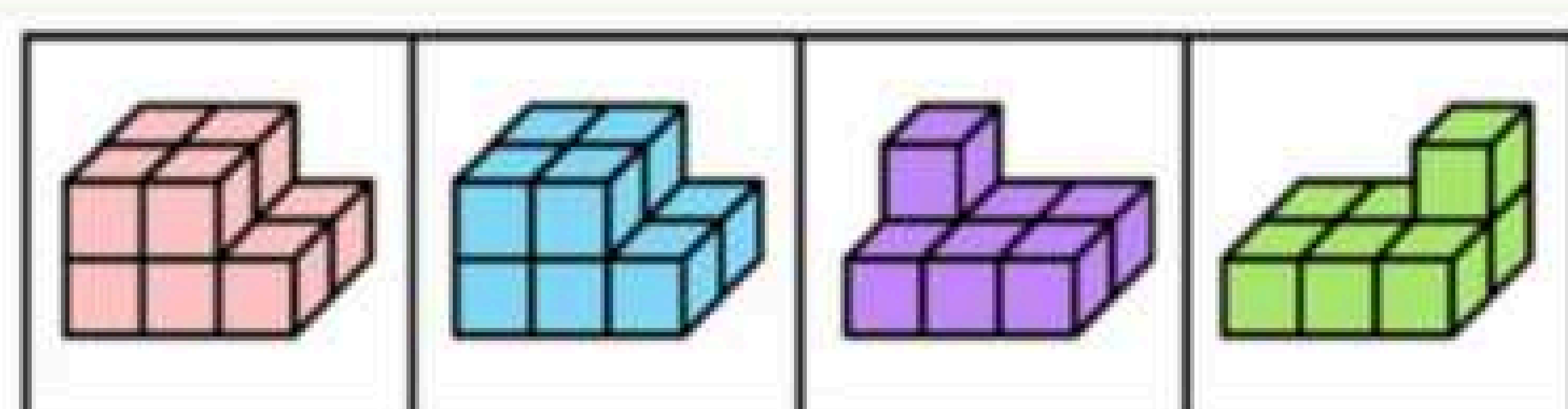


考场思维



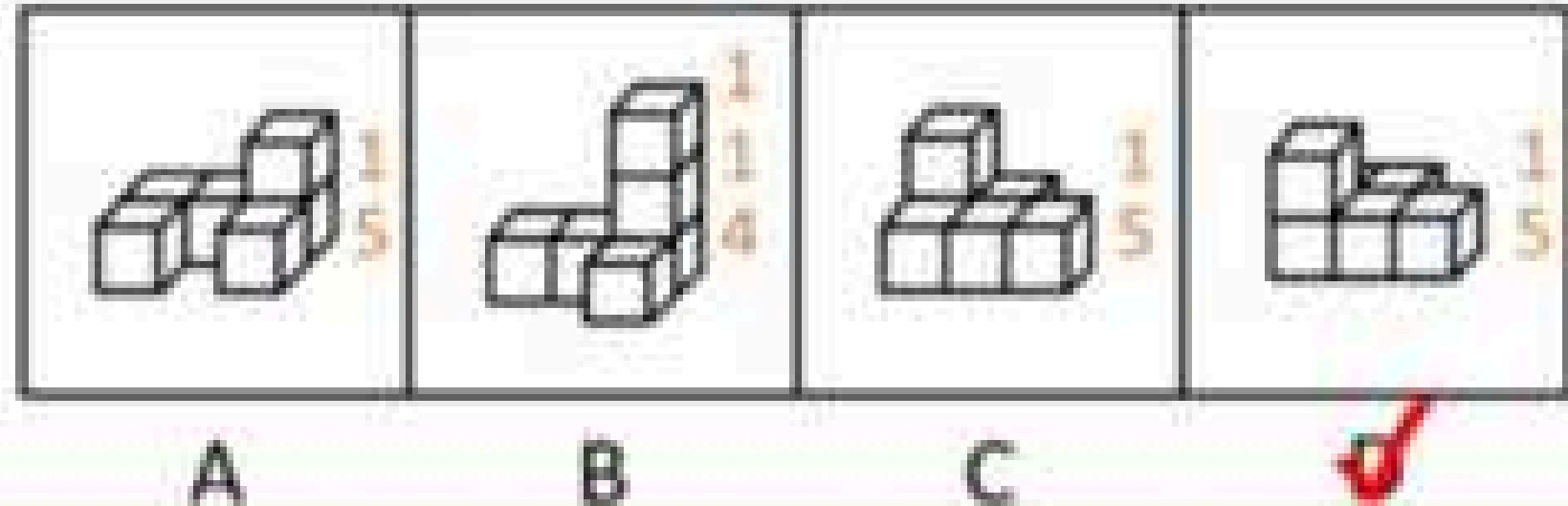
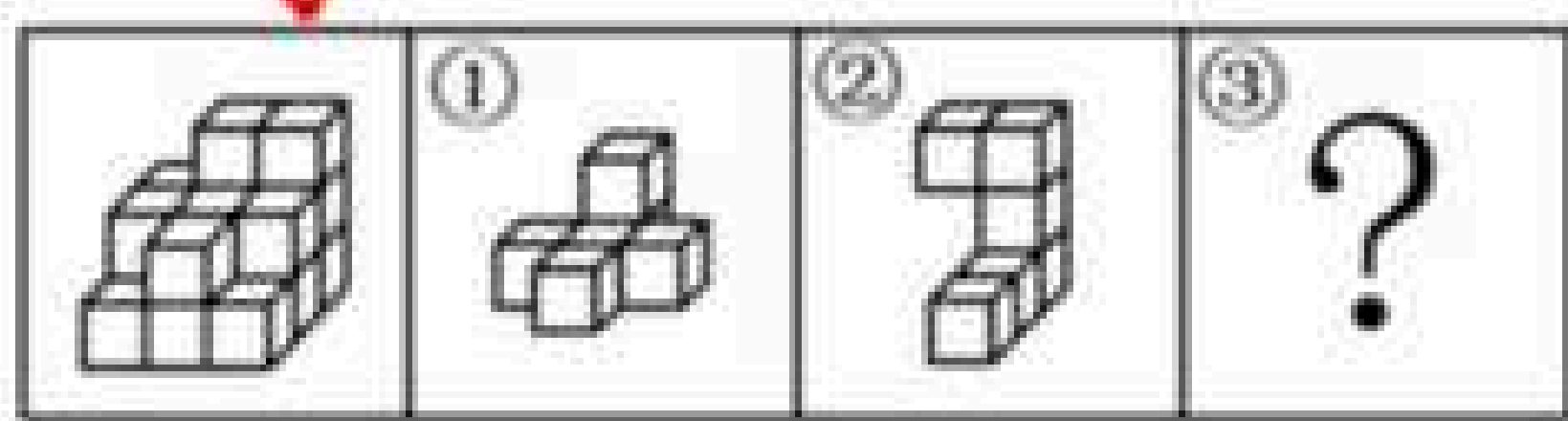
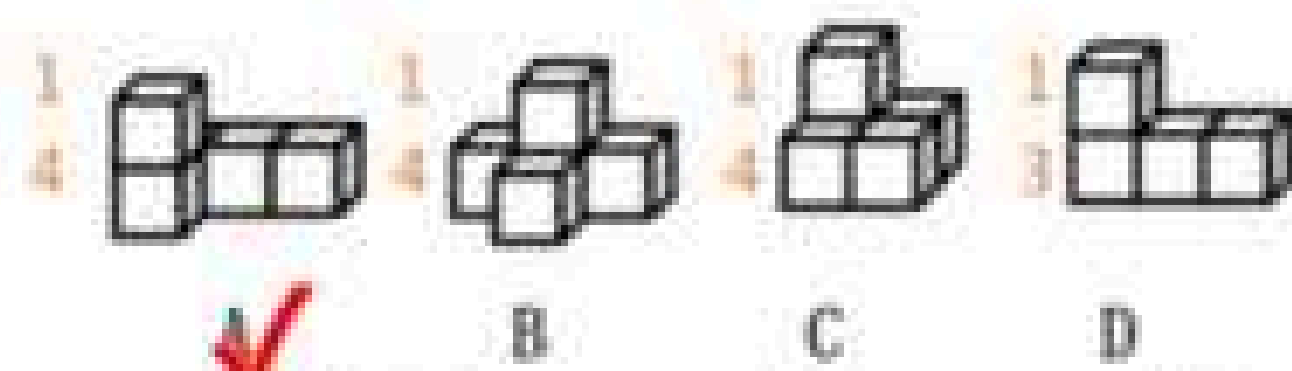
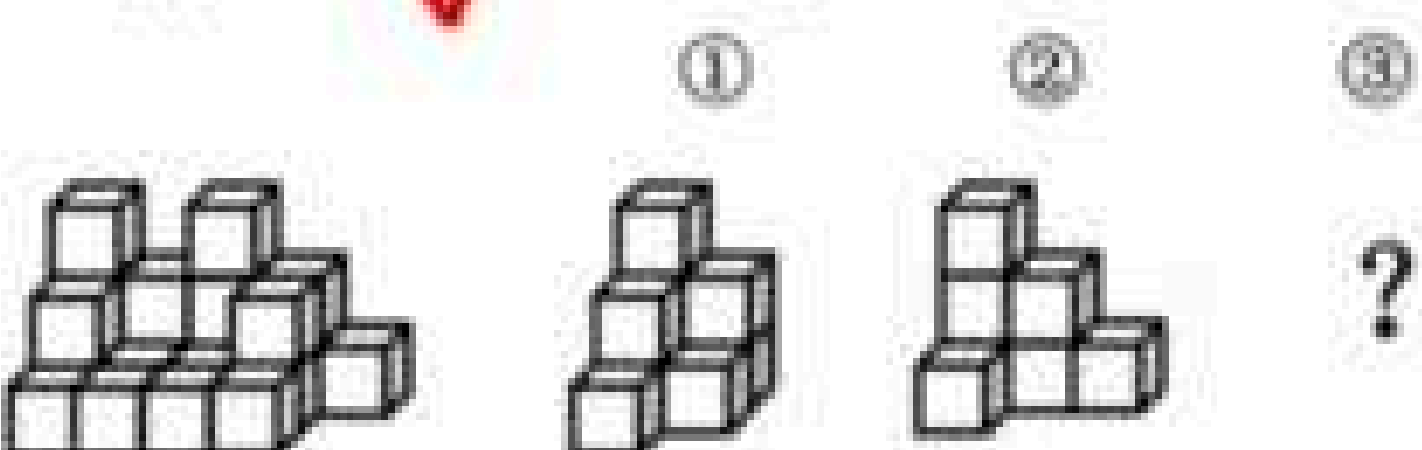
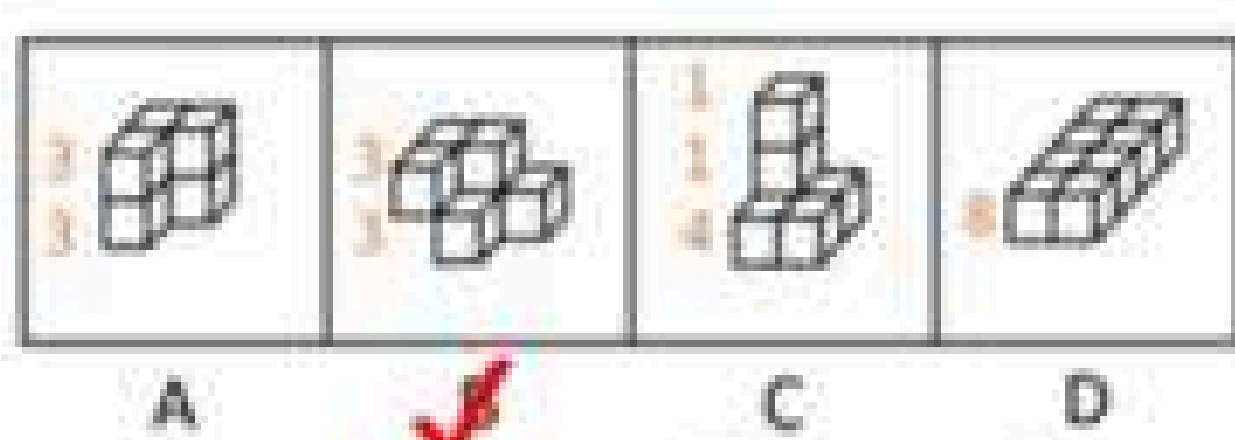
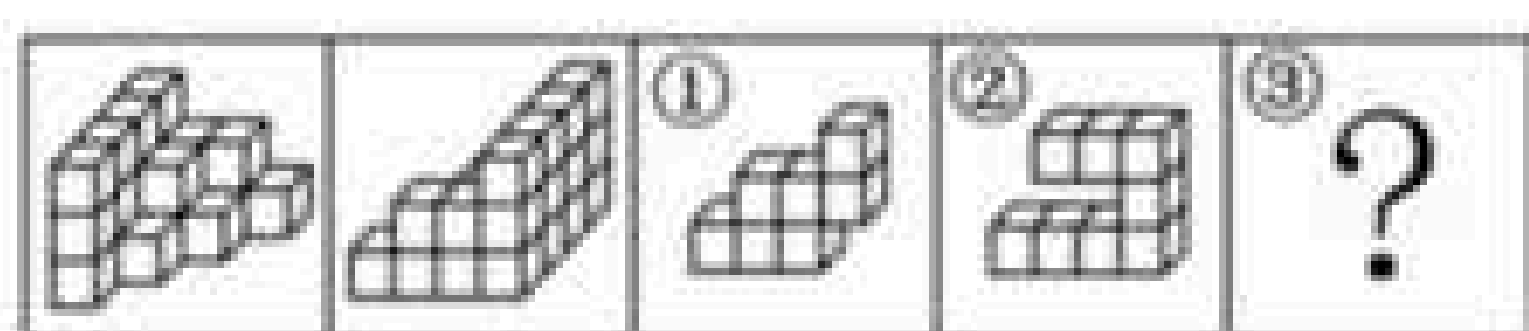
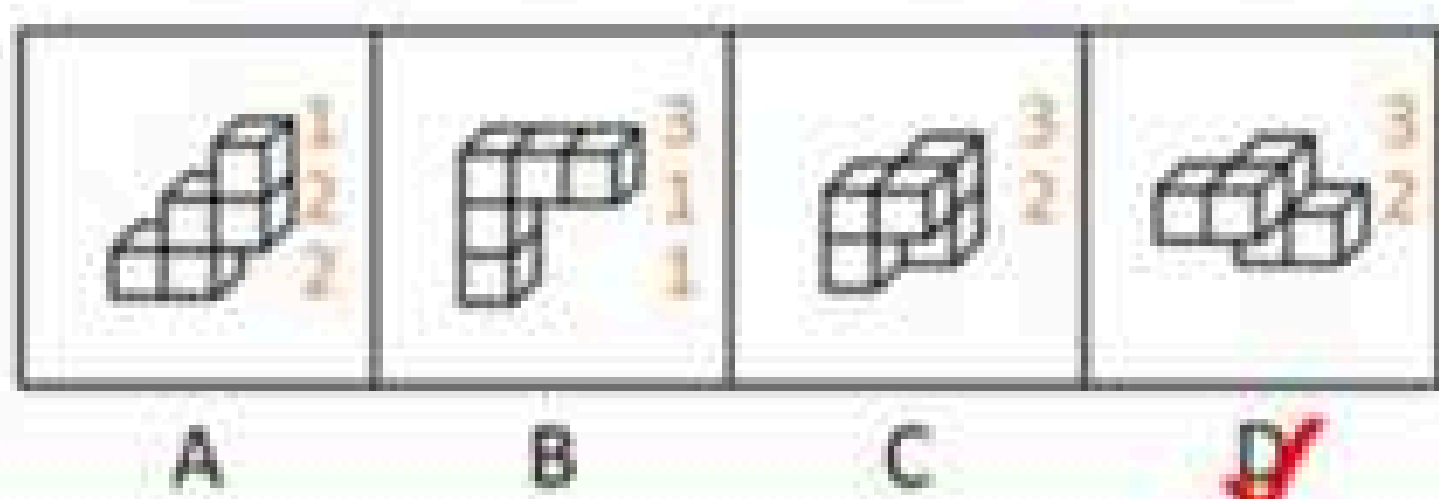
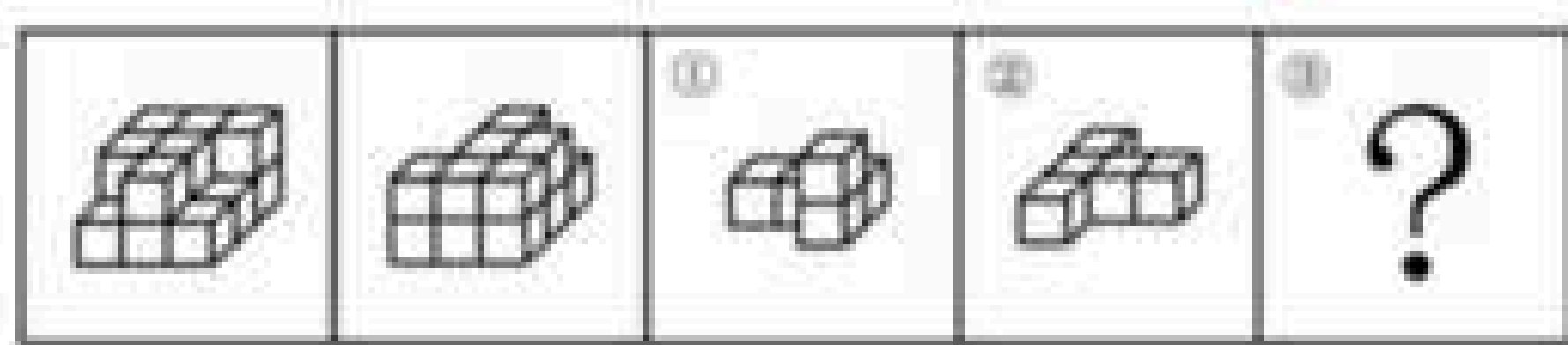
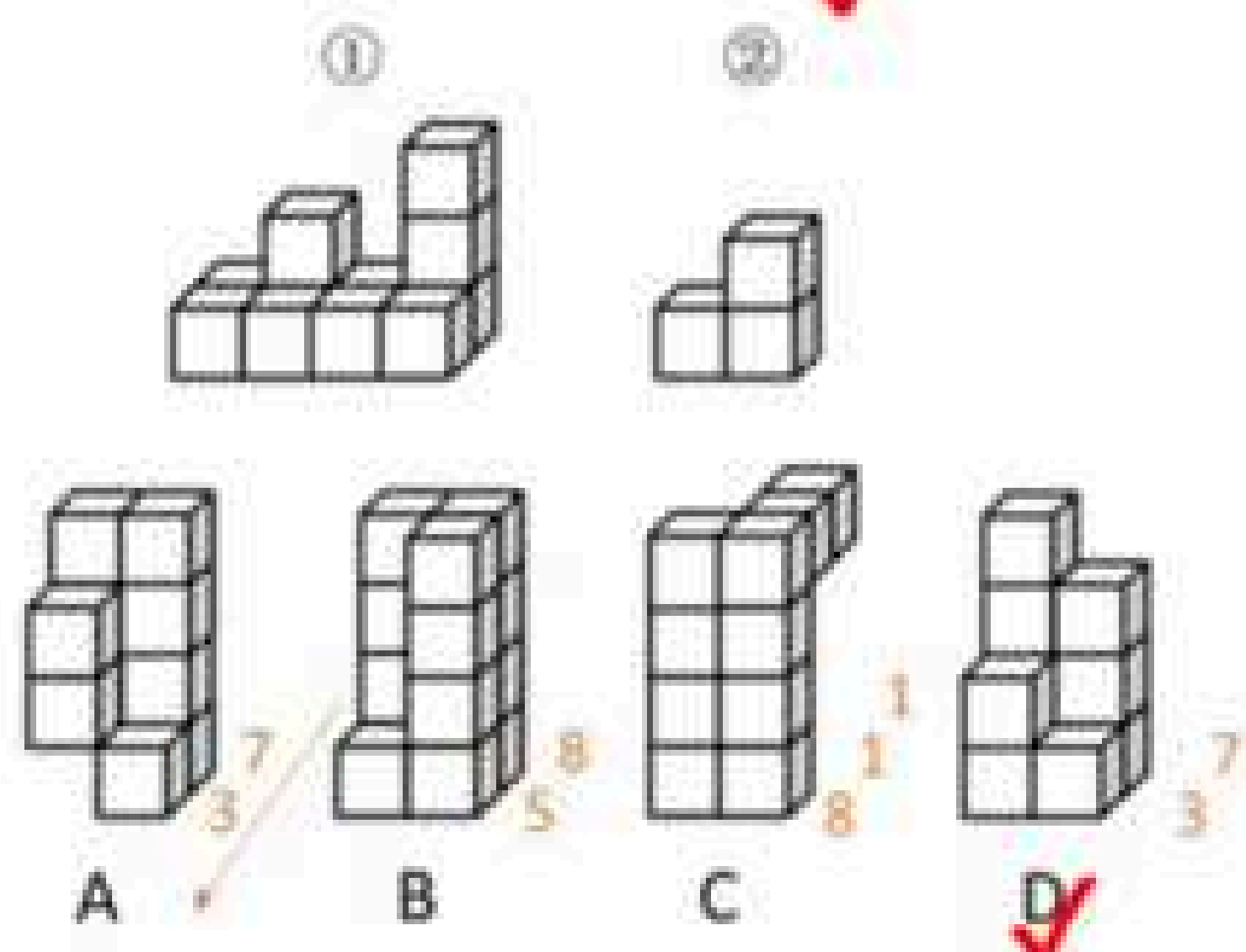
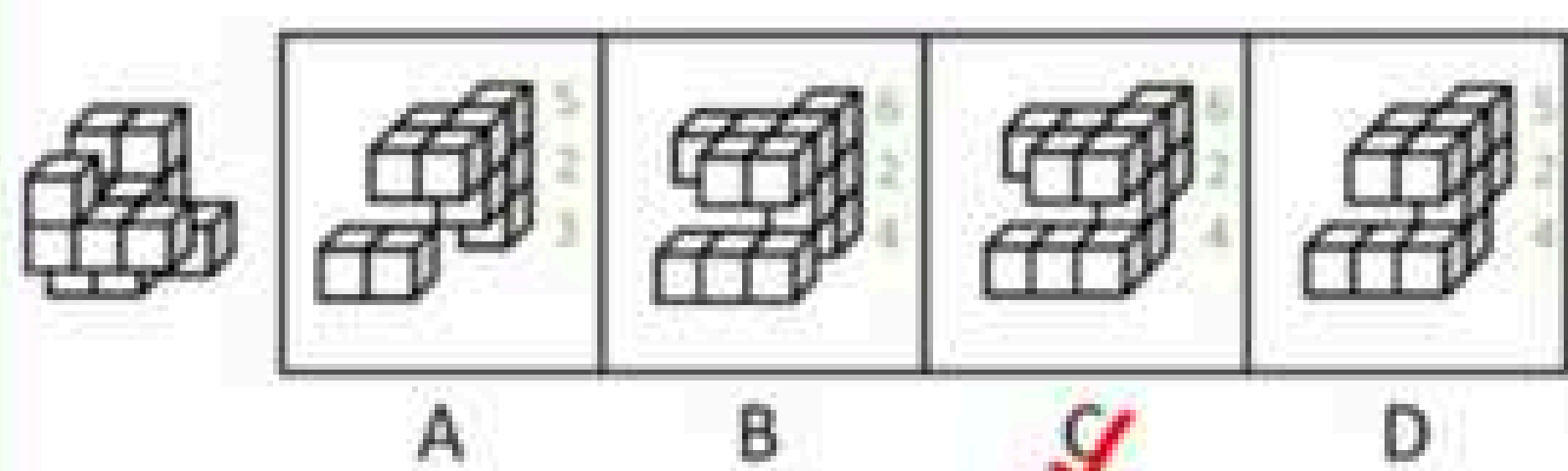
⑤考场思维:一样的方块 → 对称性

9. (25国考-46%) 以下为4个由若干棱长为1的正方体拼成的多面体, 将它们在 $3 \times 3 \times 4$ 空间内进行拼接, 不可能拼成以下四个选项中的哪一个多面体?

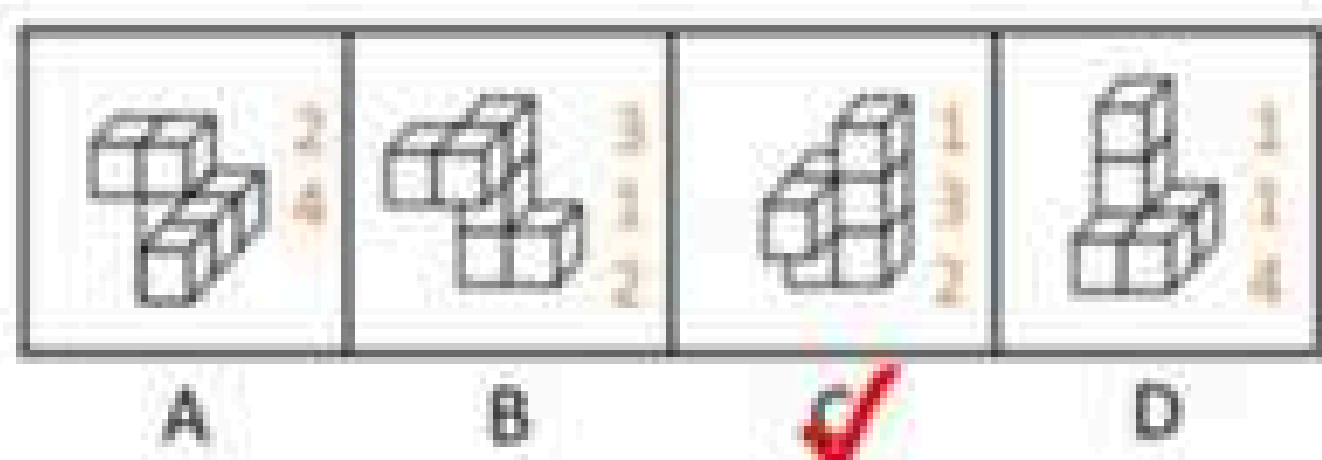
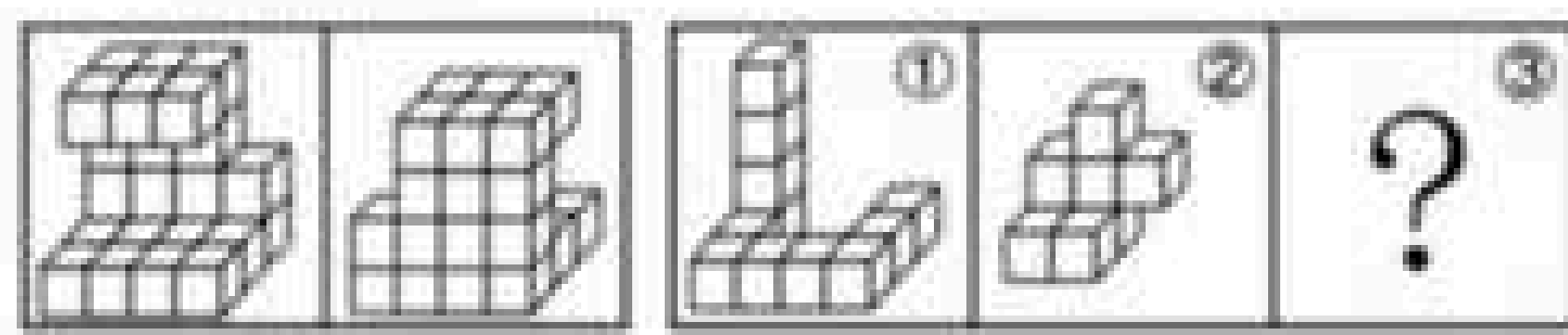
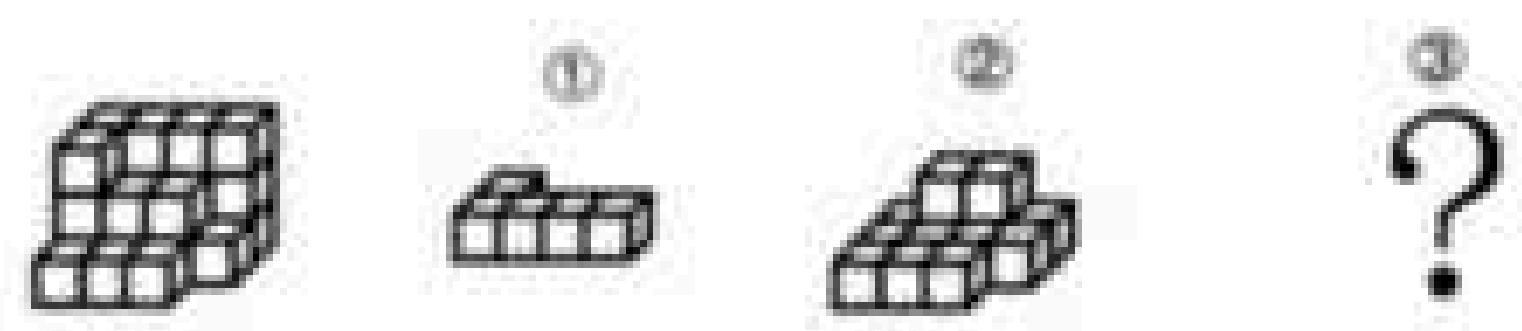


➤ 立体拼合-层数小结

➤ 每层个数一致的选项，正确可能性更高

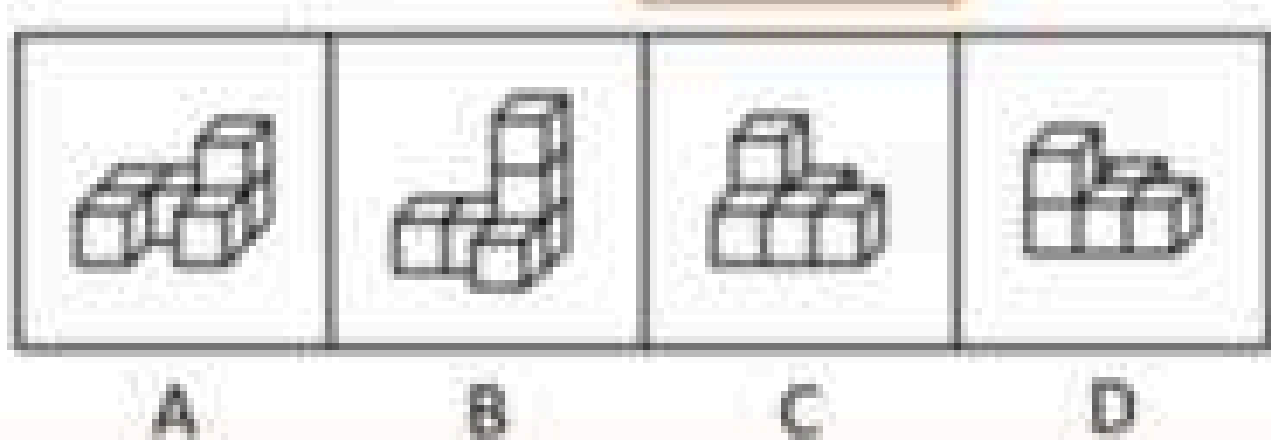
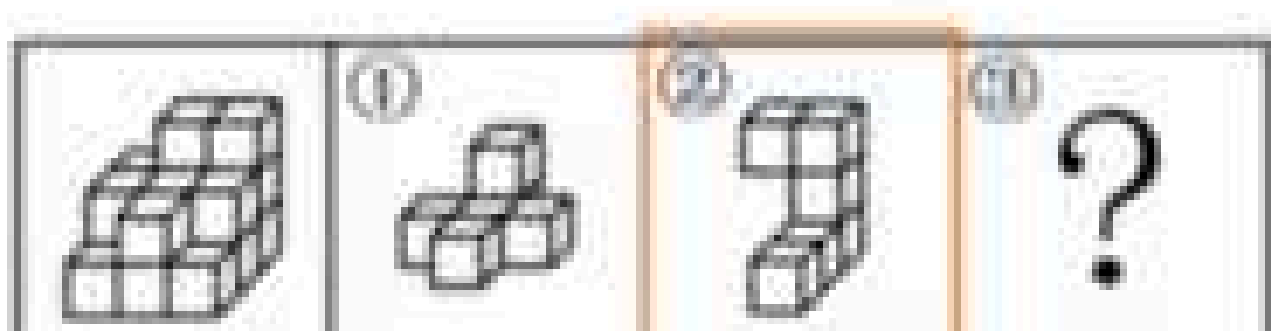
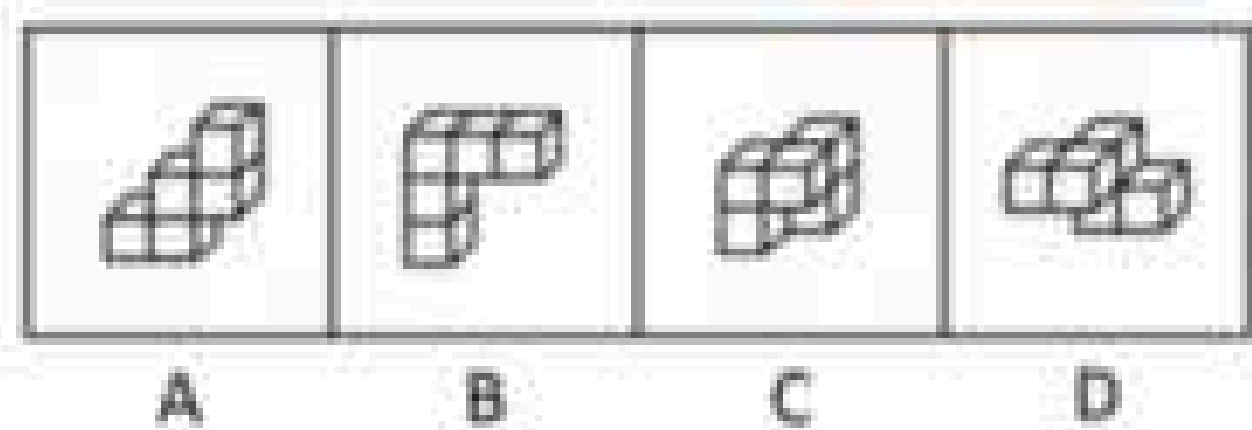
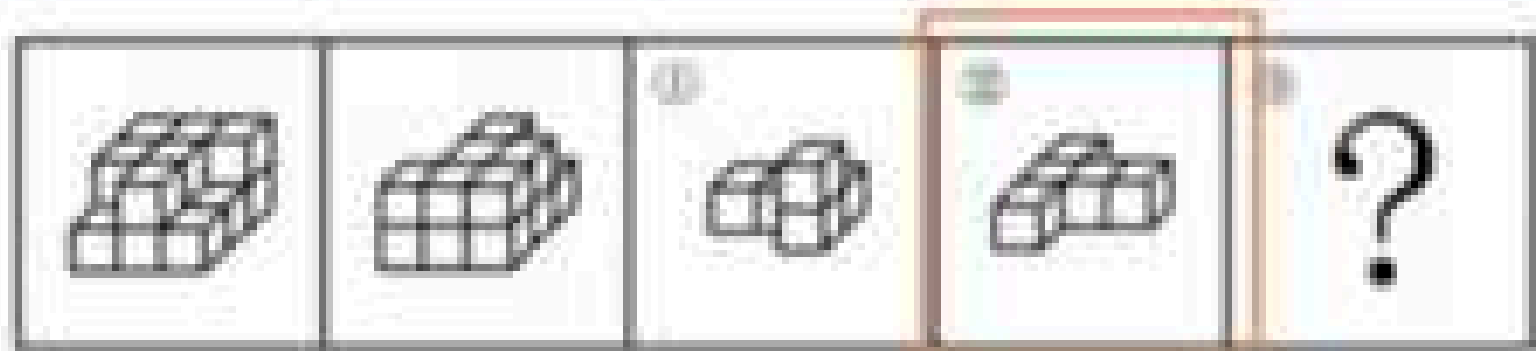
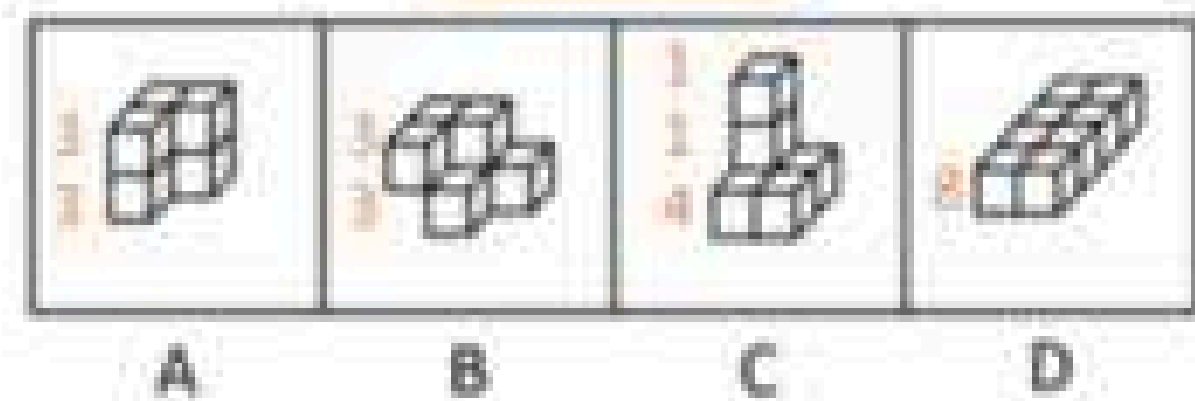
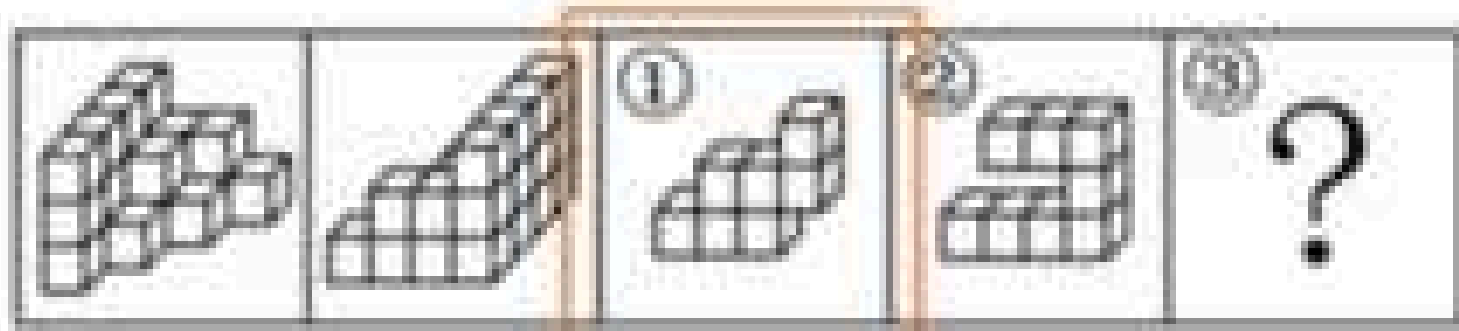
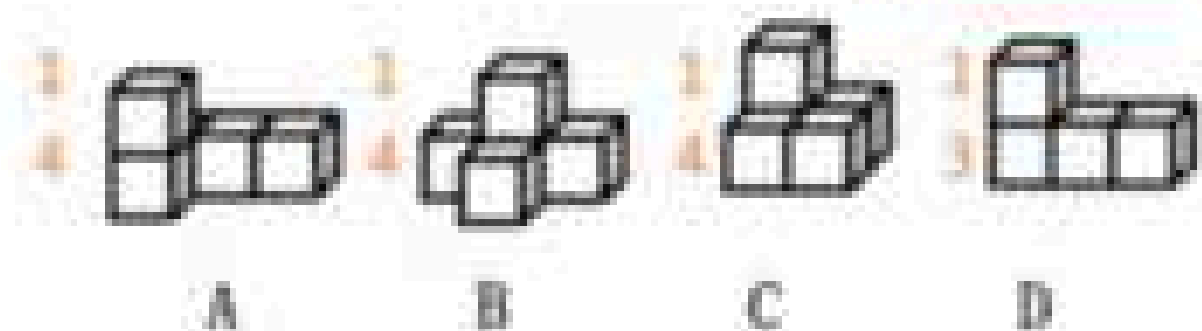
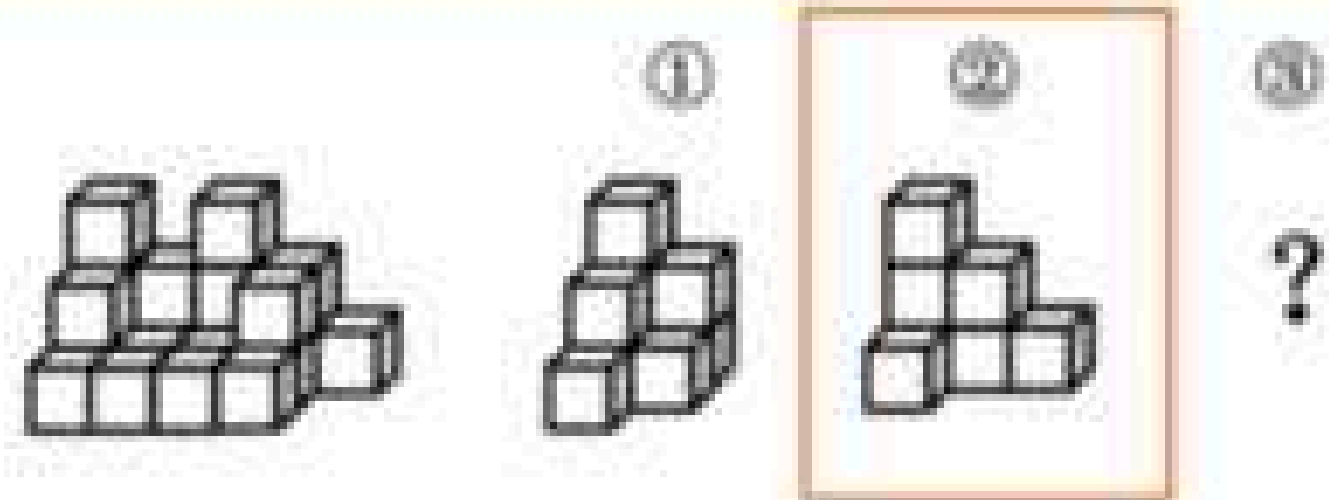


➤ 每层个数不一样，数层数性价比最高

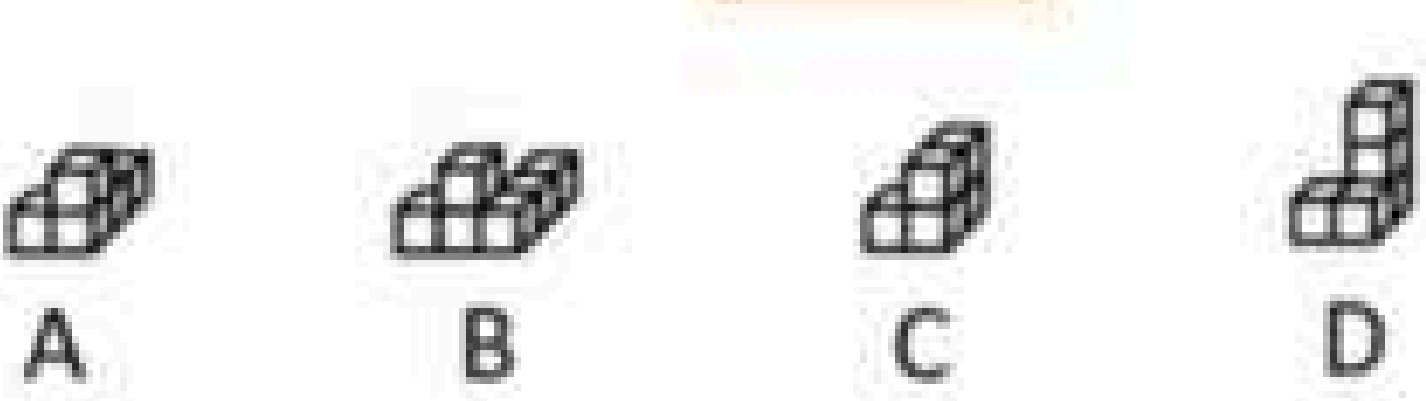
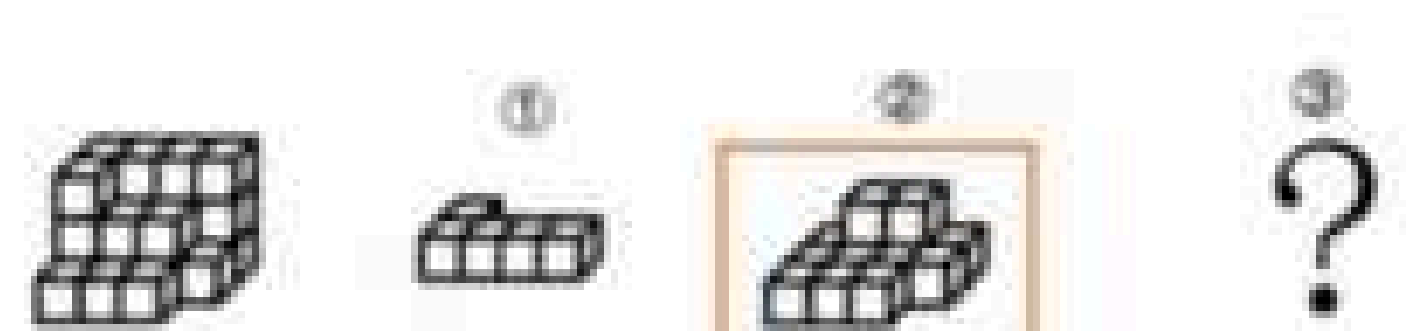
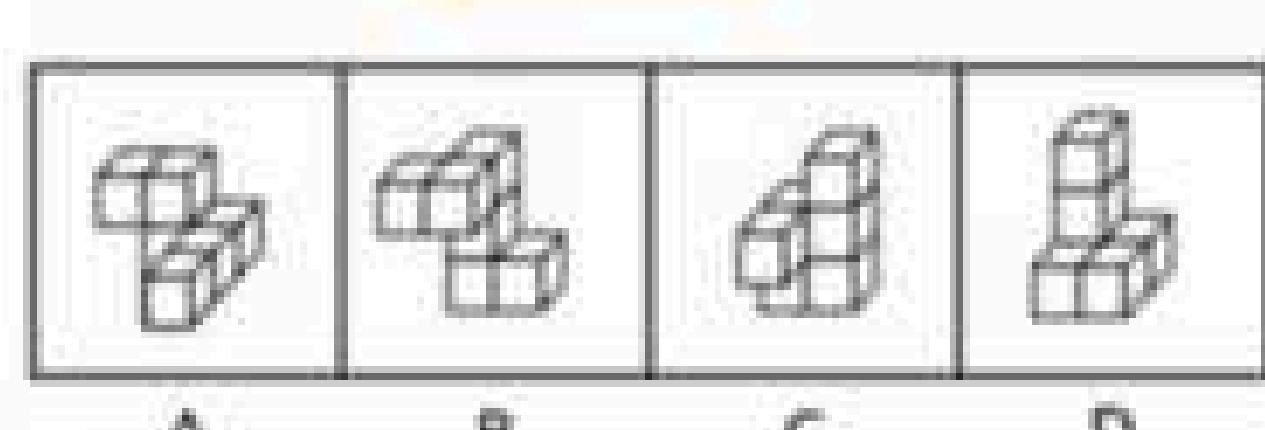
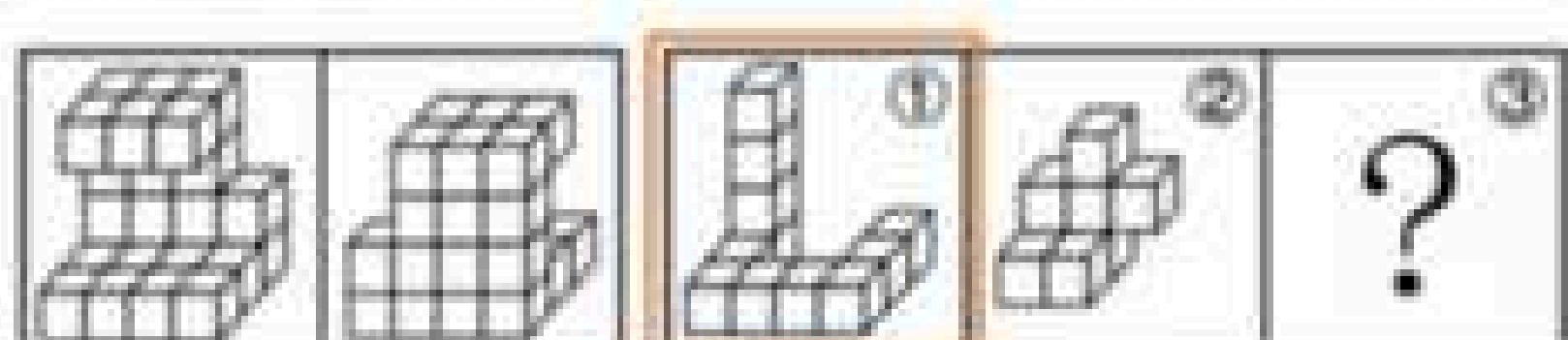


➤ 立体拼合-特殊小结

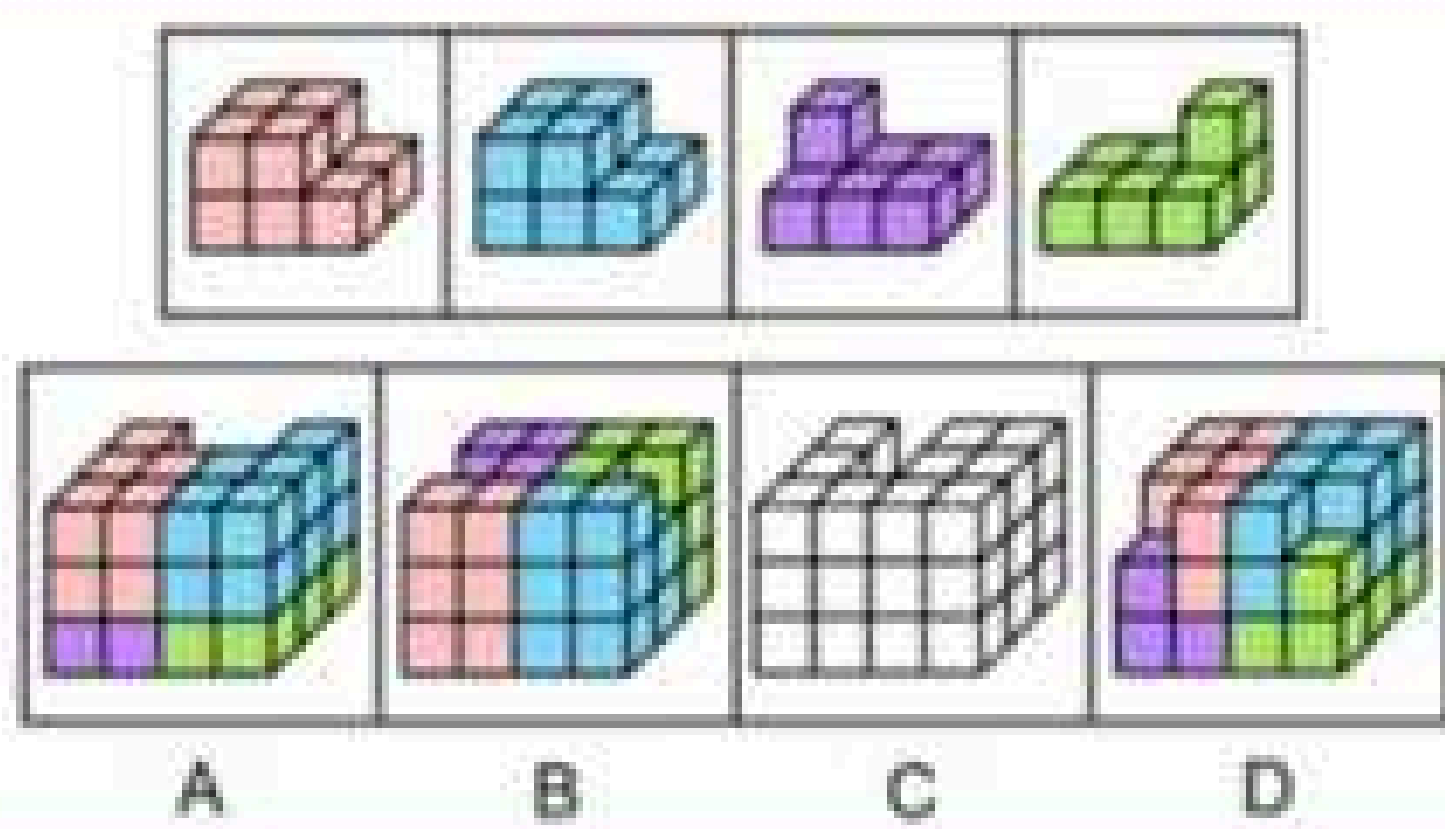
➤ 抽象



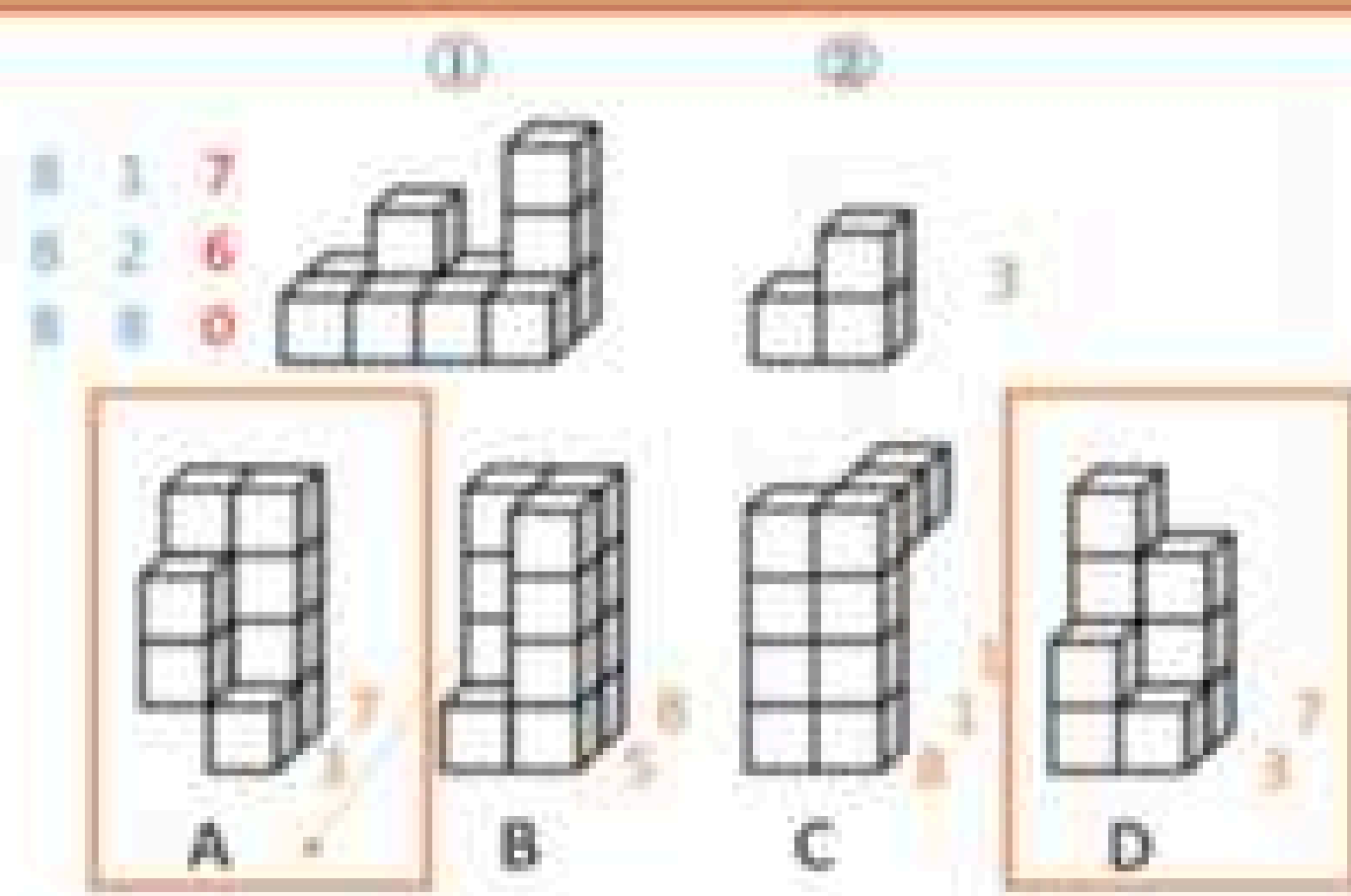
➤ 最大



➤ 一样的方块 → 对称性



➤ 选项更大



立体拼合-黑白类

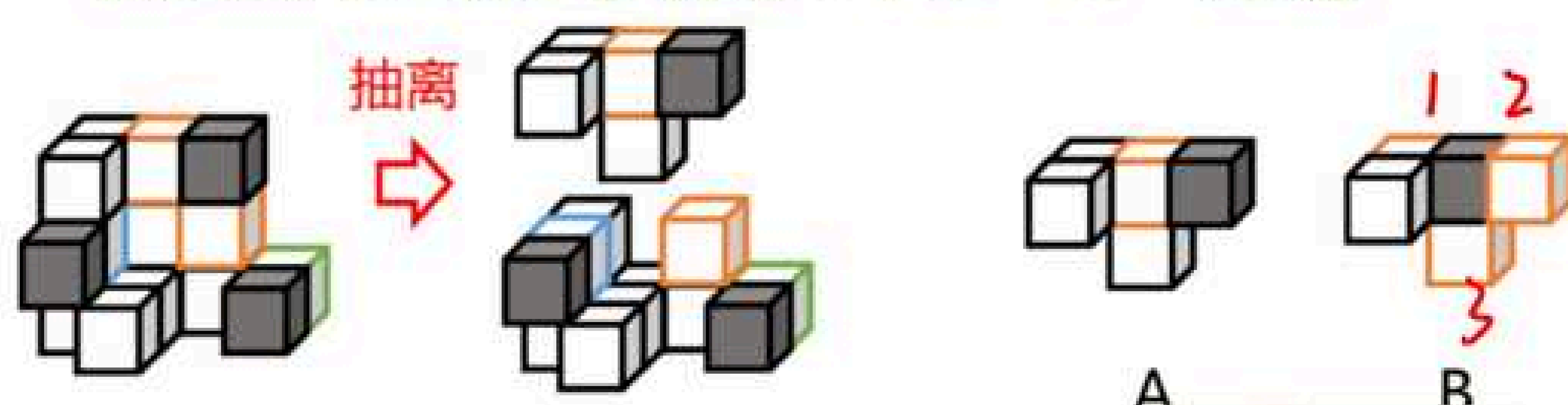
黑块类-答题思路:依次确定3个黑块位置

方法:

1.黑块与白块的接触面总数(猜测)

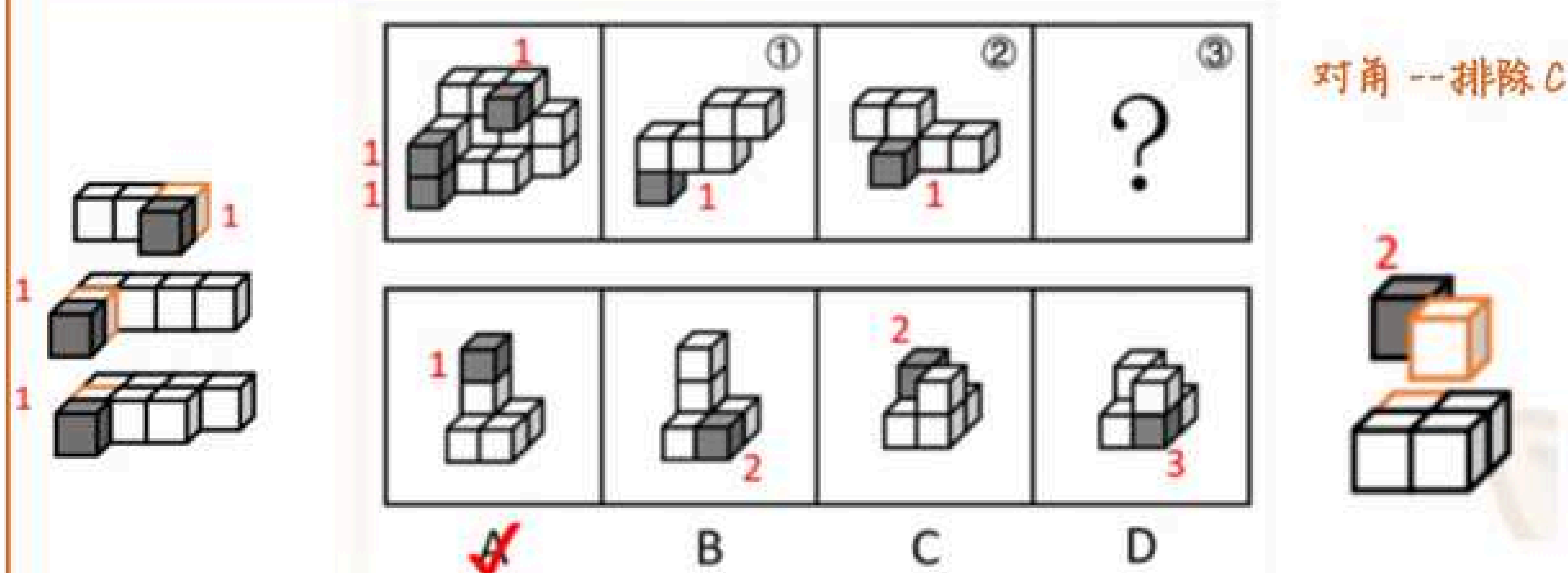
接触面的个数来排除

发现黑块都是各接触1个白--B一定错

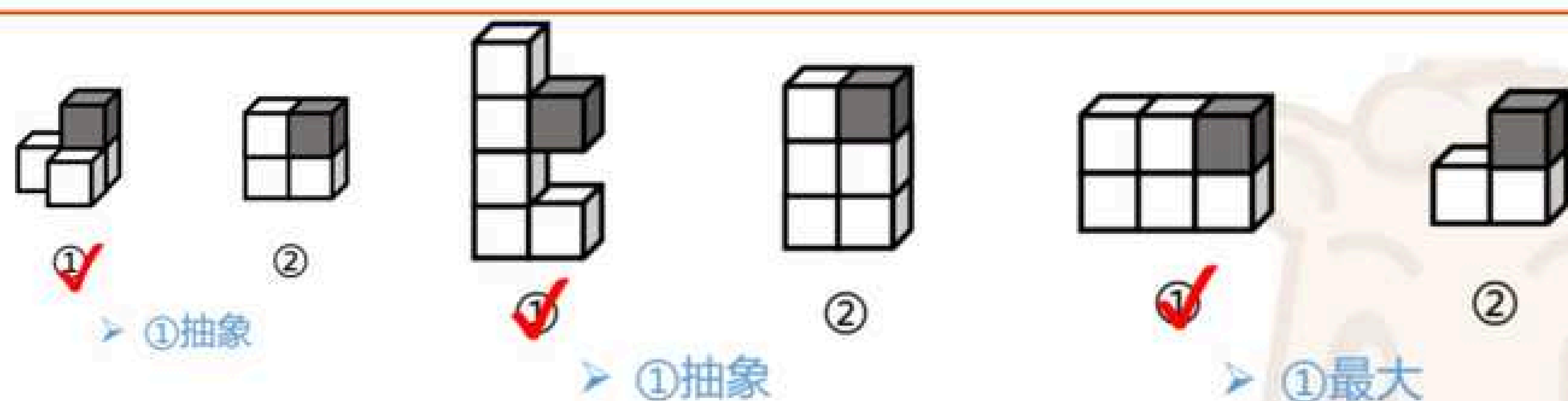


➤ 选项黑块接触面个数 < 题干黑块接触面个数

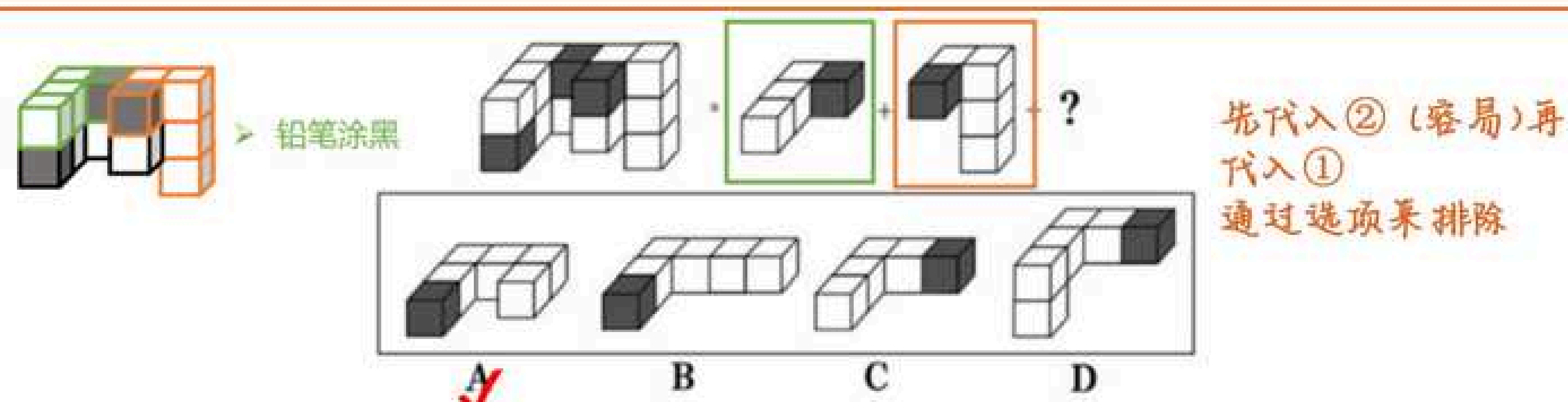
对角的情况可排除



2.考虑找特殊,即找题干中最大或抽象的方块,优先代入

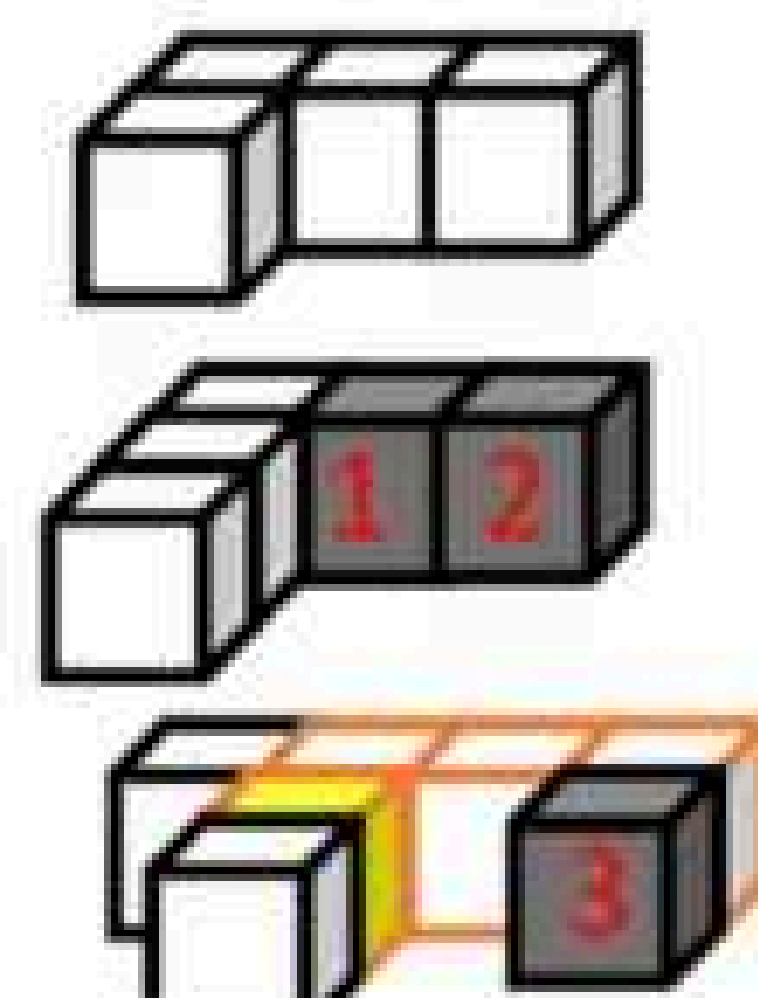
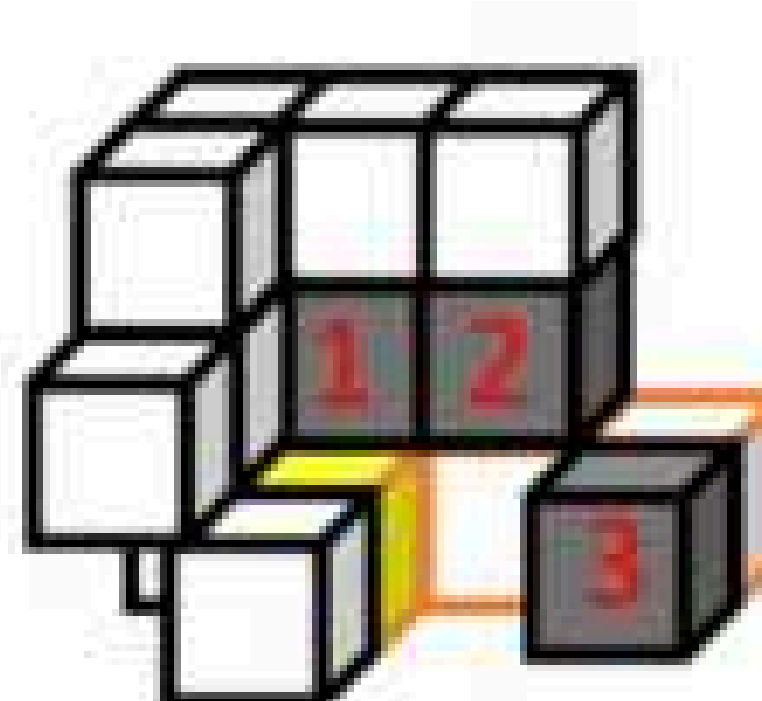


➤ 题干中, 越大或越抽象的方块, 位置的局限性越大



先代入②(容易)再代入①
通过选项来排除

3.合理分割(黑块跟几个白块相连-合理性)

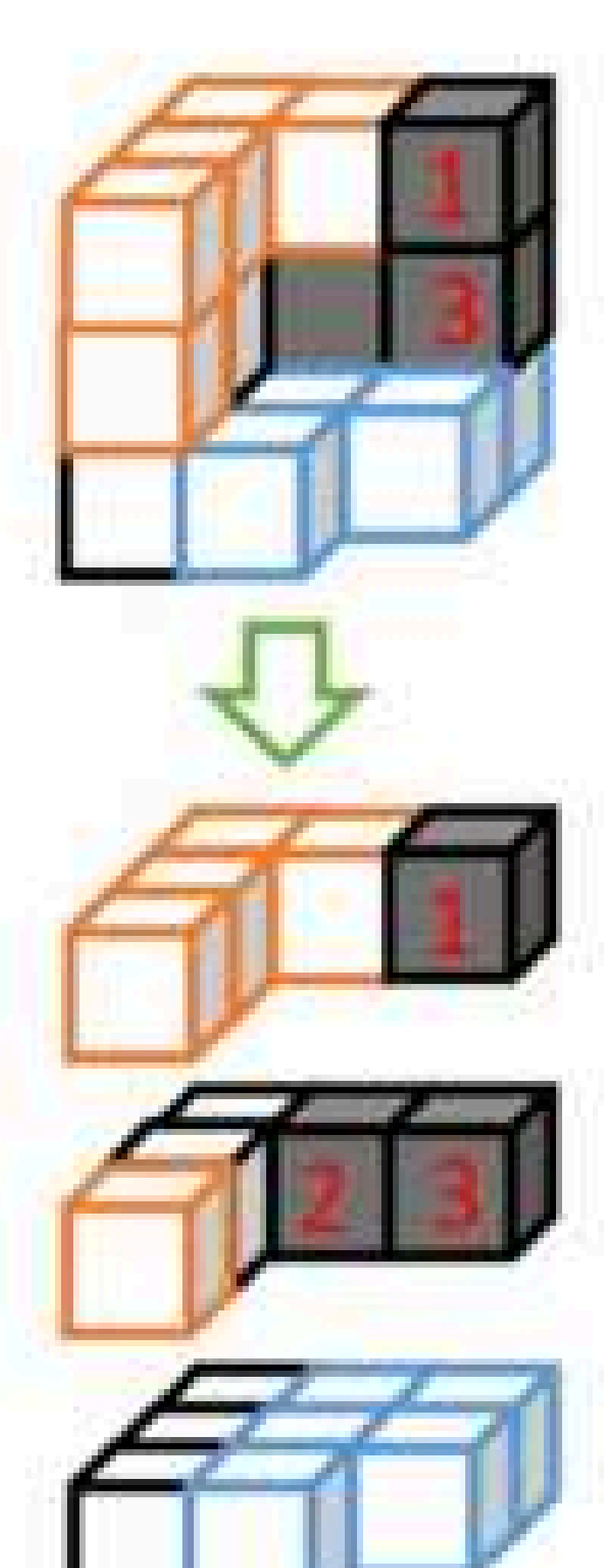


➢ 橙色方块一定属于③

➢ 黄色方块已经无法和①②正常相连

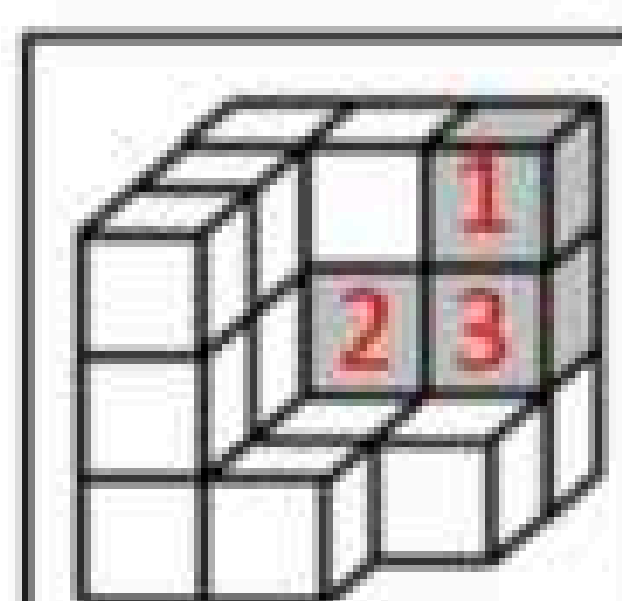
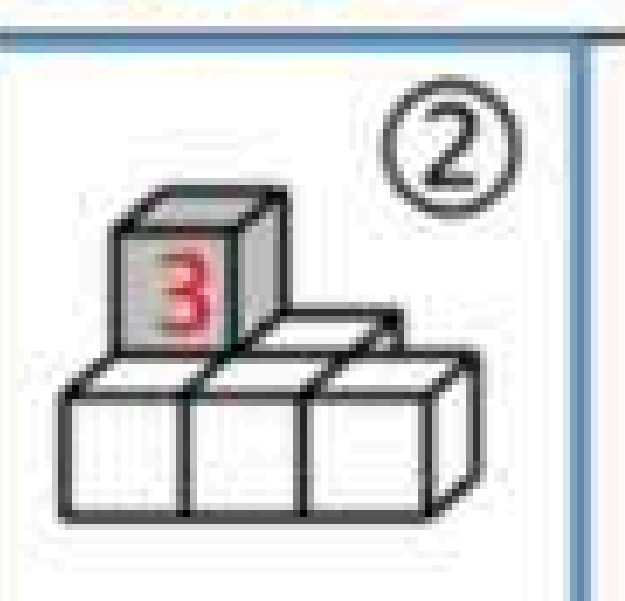
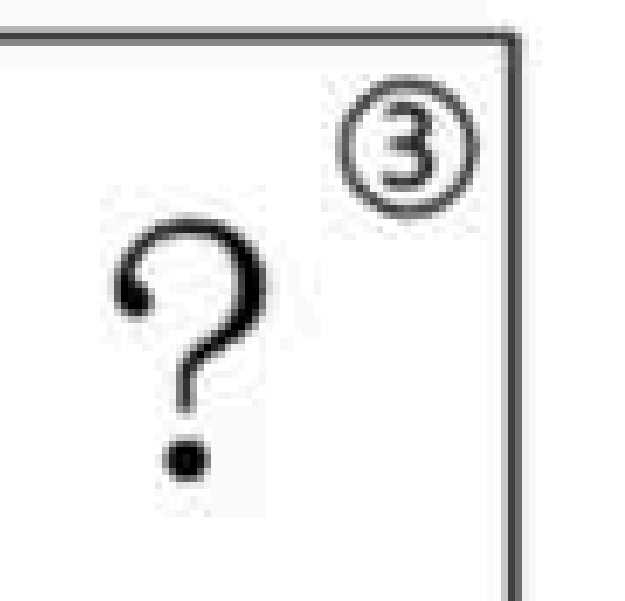
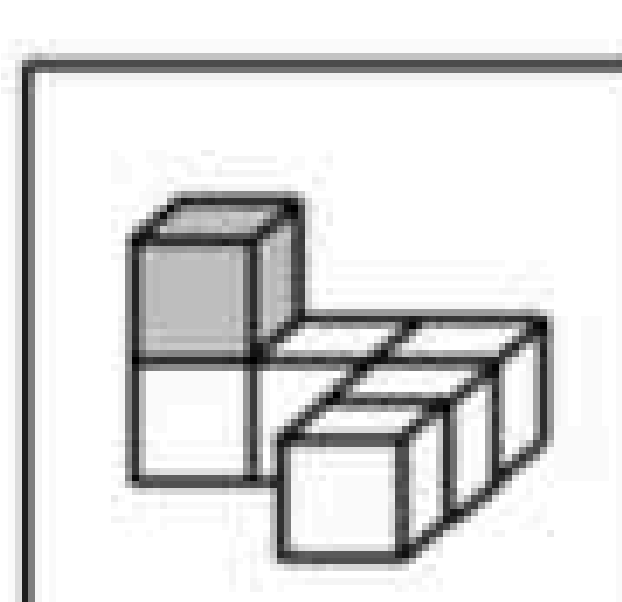
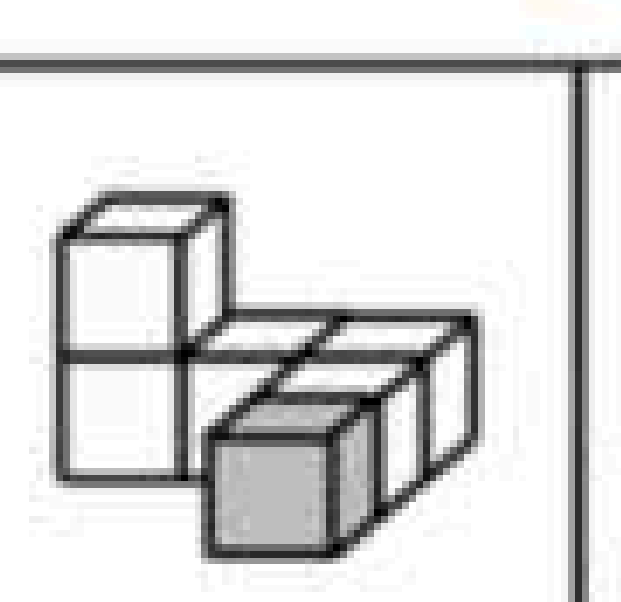
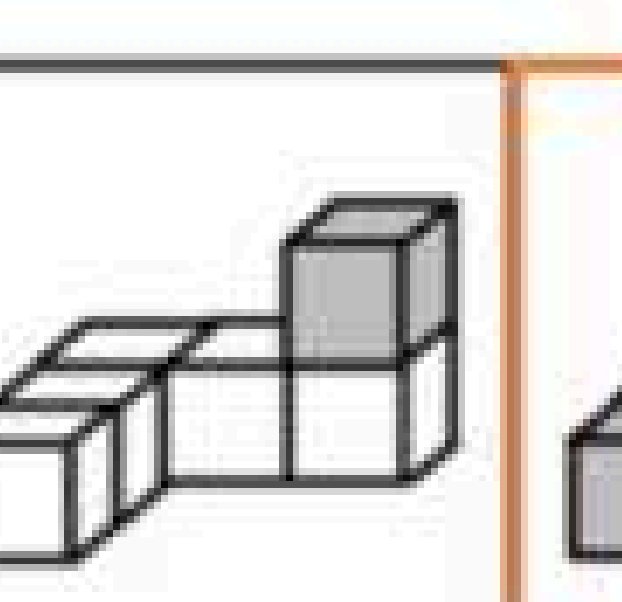
➢ ①②③谁的位置最特殊? ③

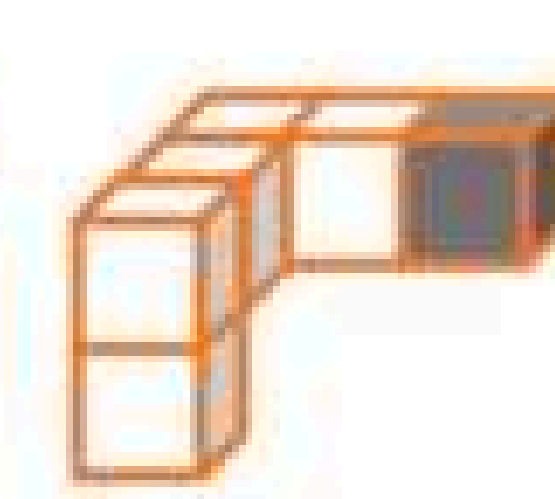




➢ 铅笔涂黑

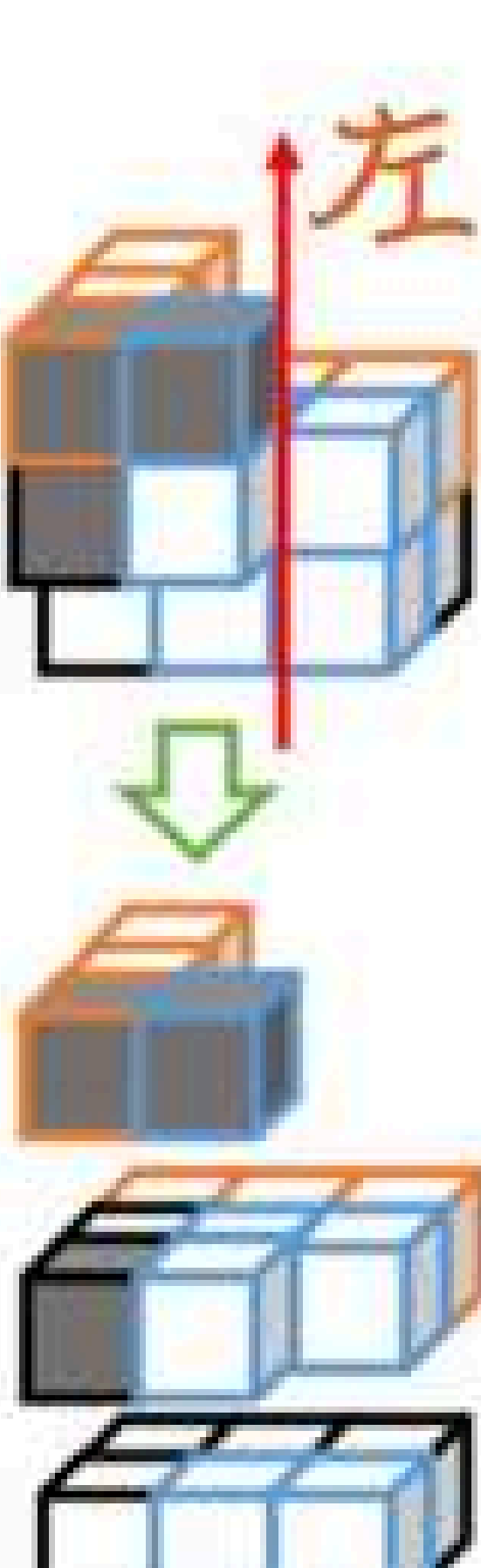
➢ 哪个方块位置最特殊?

	①		②		③
	A		B		C

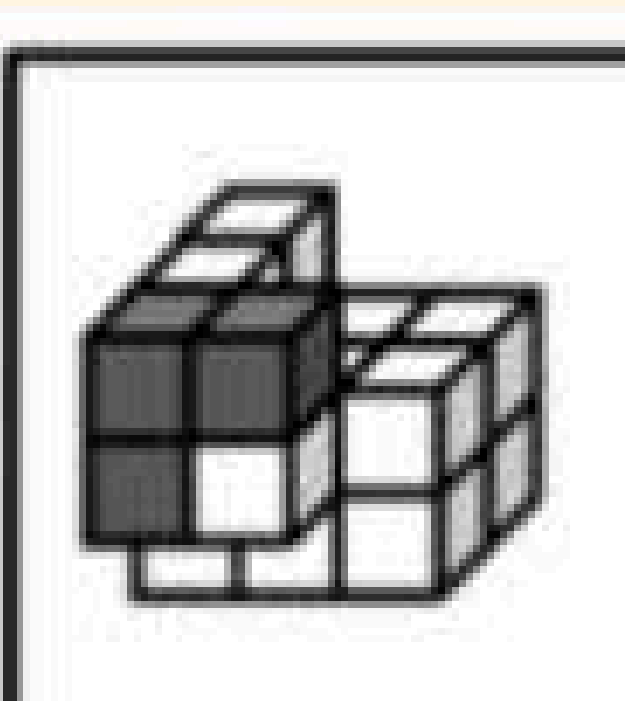
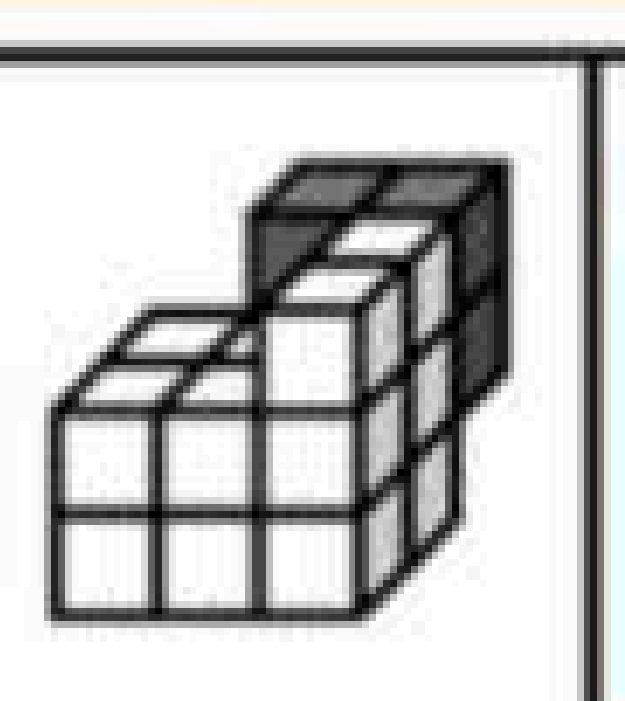
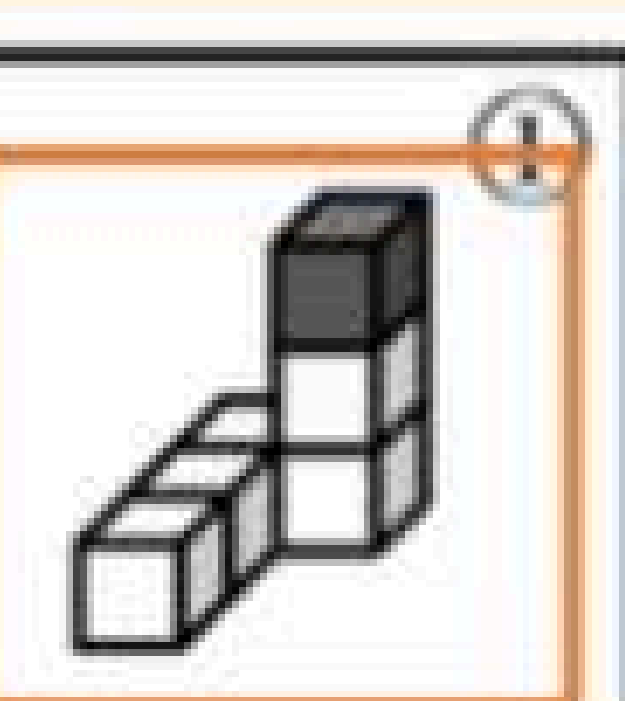
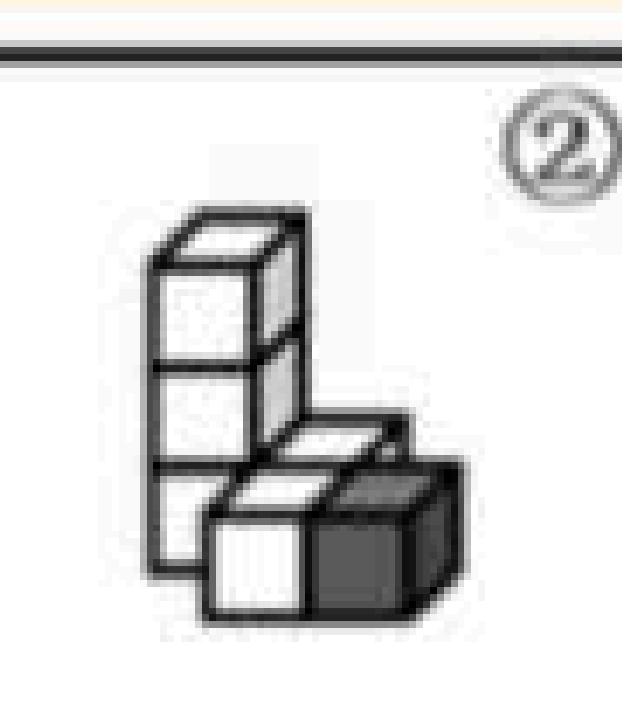
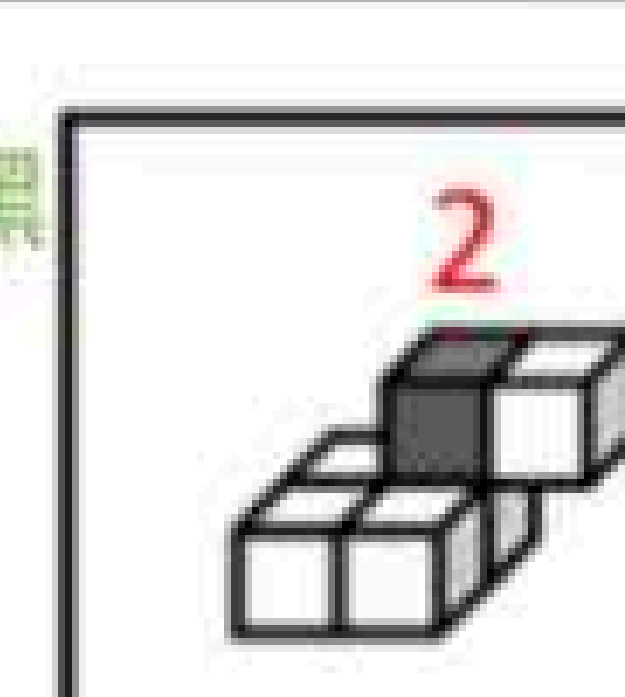
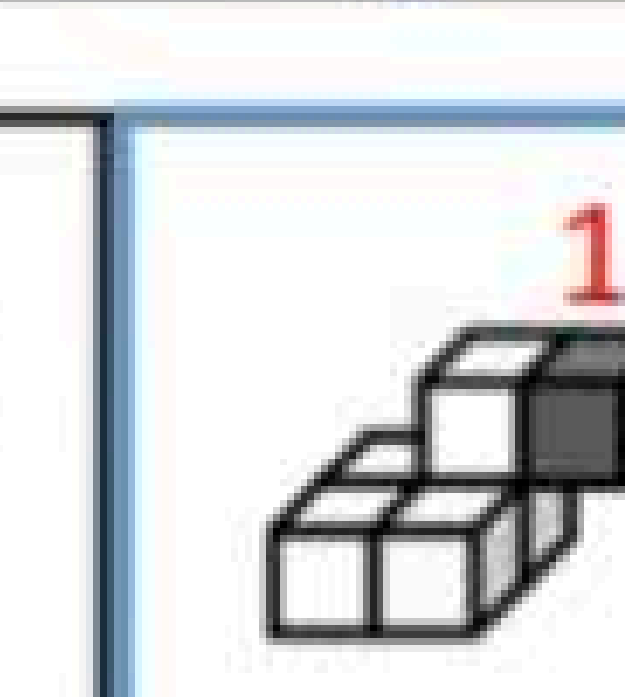
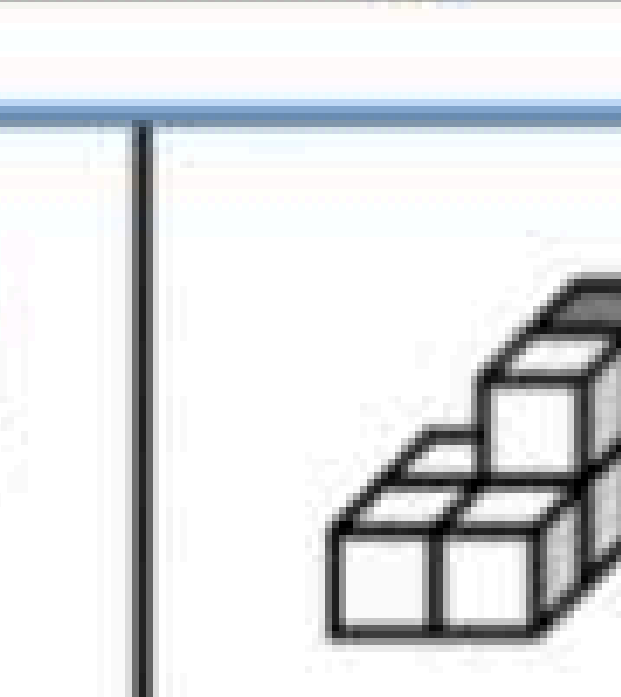
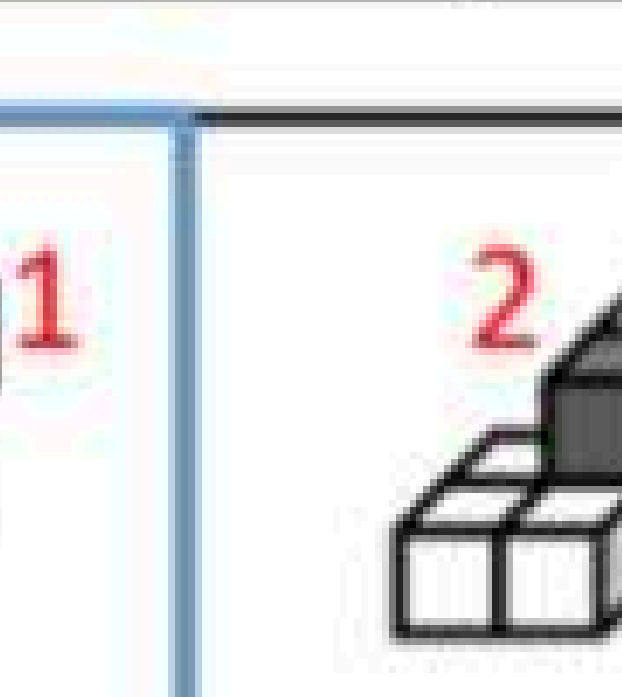
➢ 最终答案: 

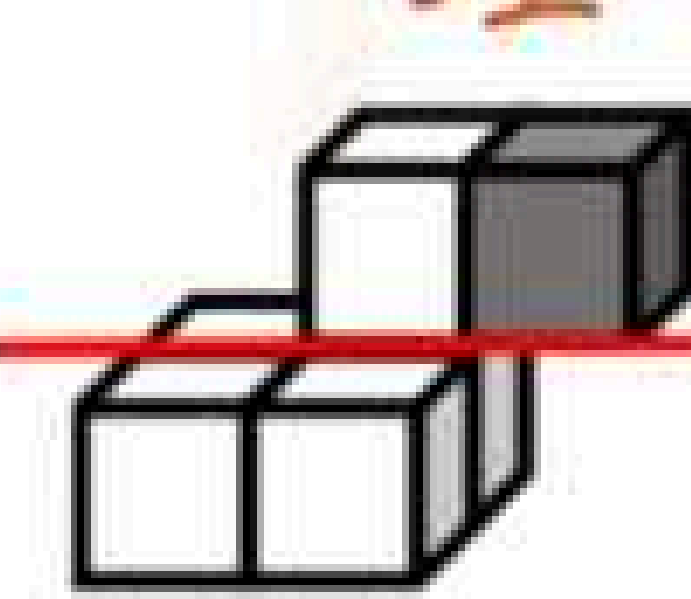
4.箭头法

小红书：@贝栗子



➢ 铅笔涂黑

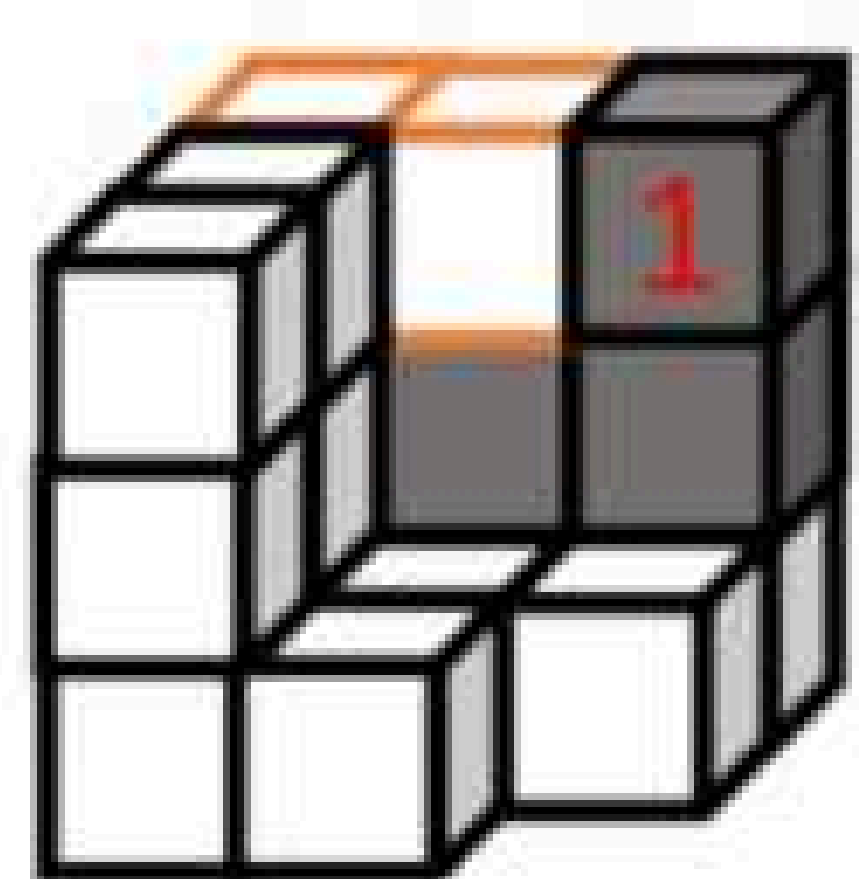
			①		②		③
				A	B	C	D

➢ 最终答案: 

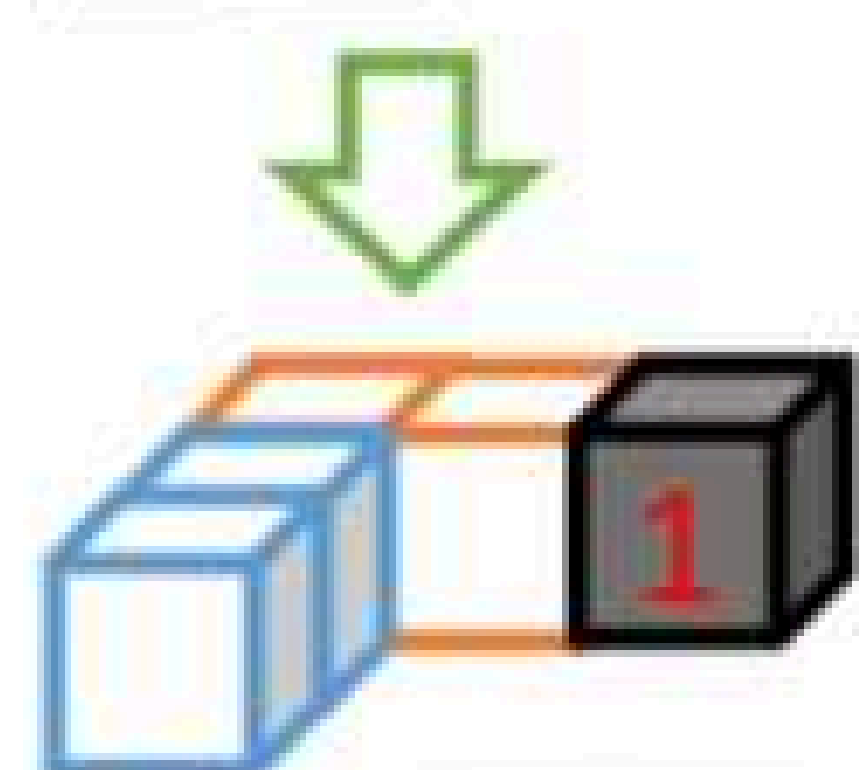
快速记忆：①接触面、②找特殊、③合理分

(黑块跟几个白块相连-合理性)

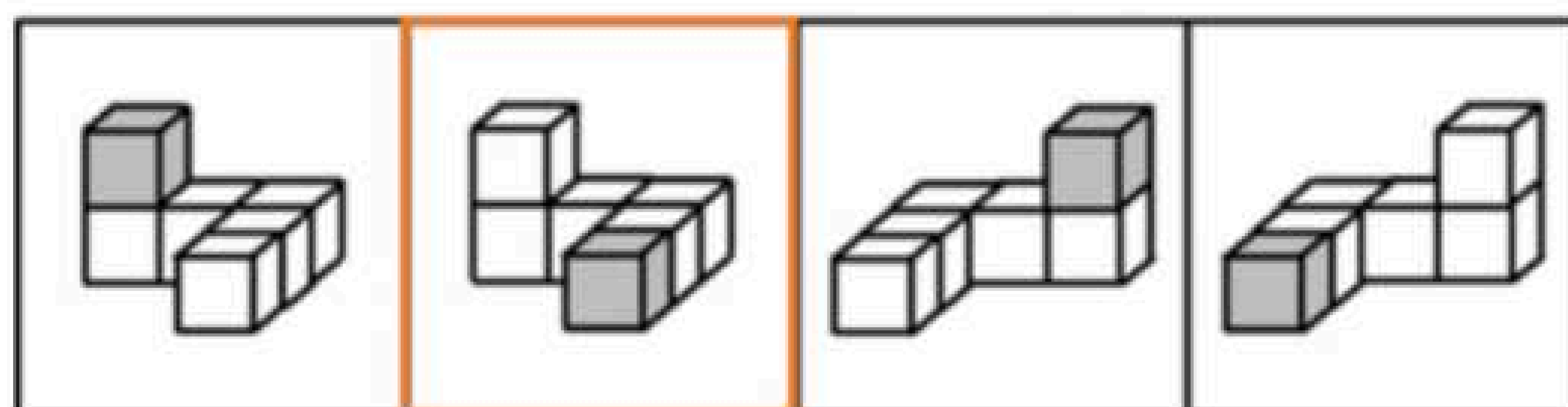
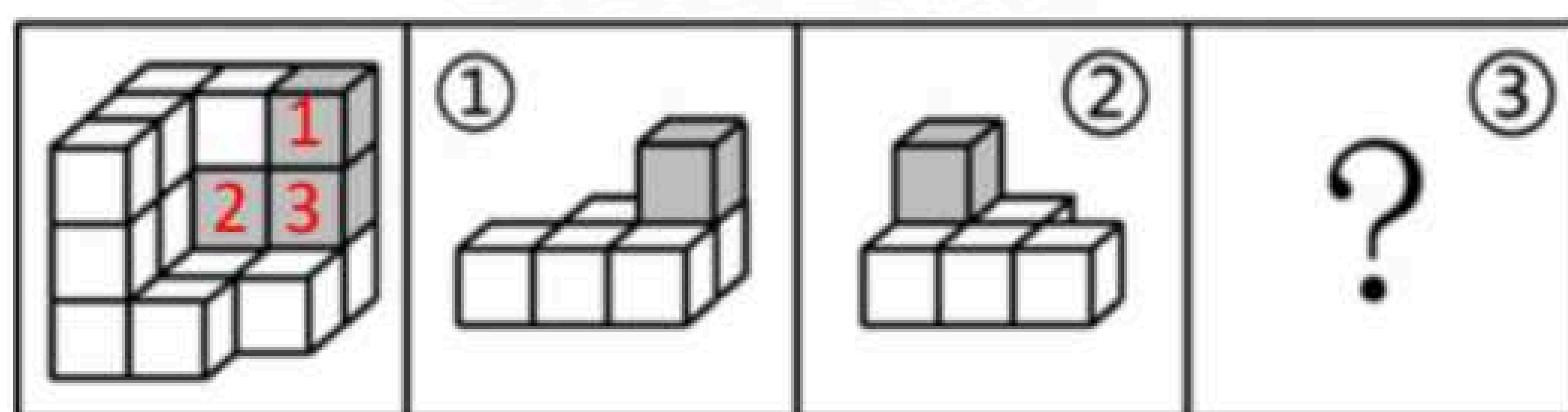
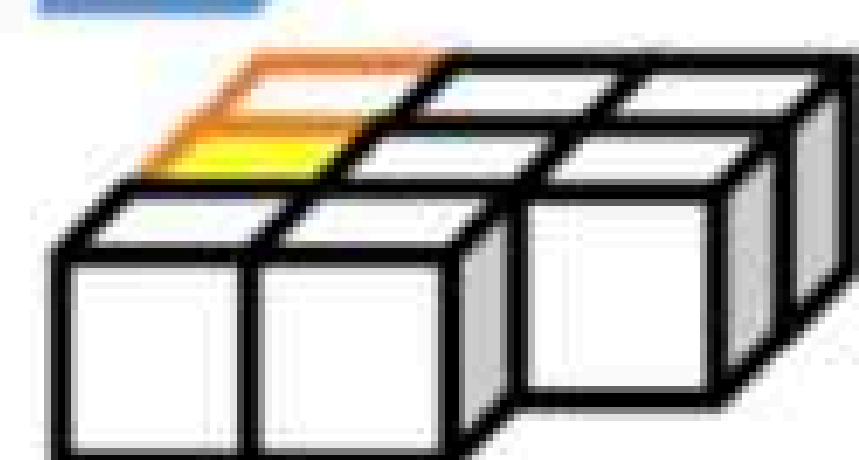
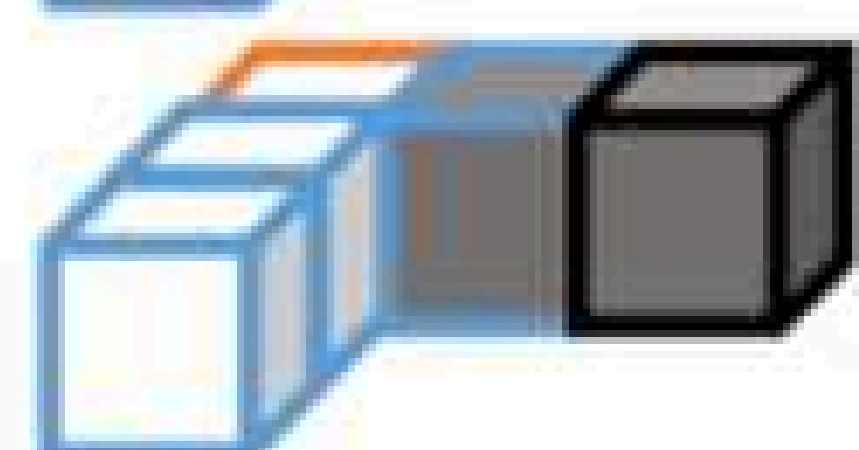
➤ 哪个方块位置最特殊?



➤ 铅笔涂黑



➤ 分割不合理



A

B

C

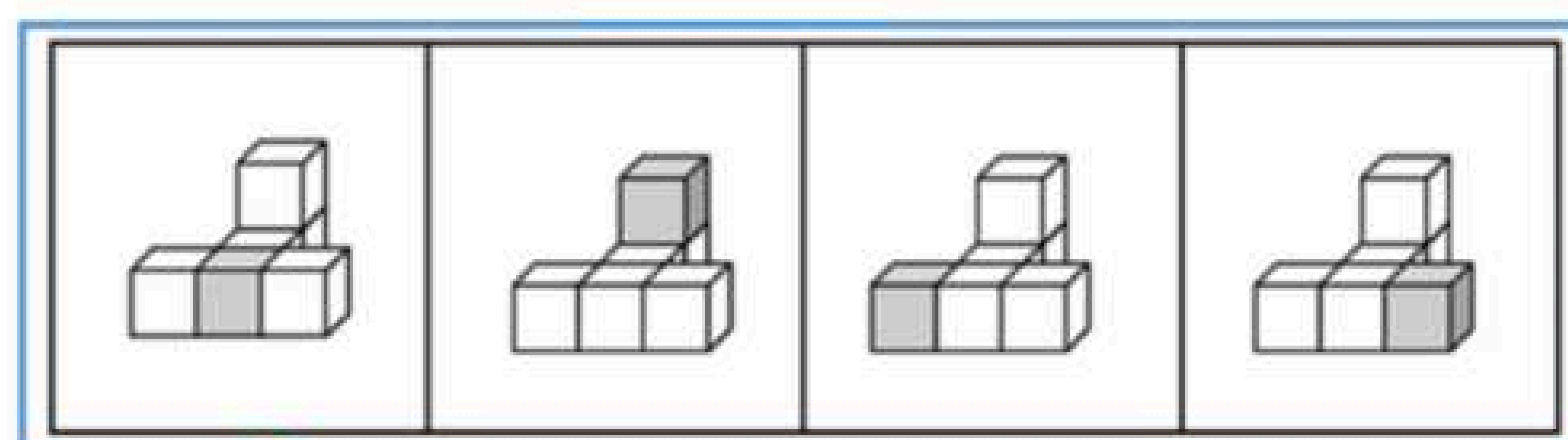
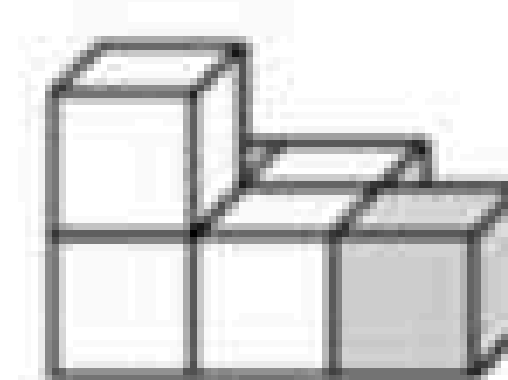
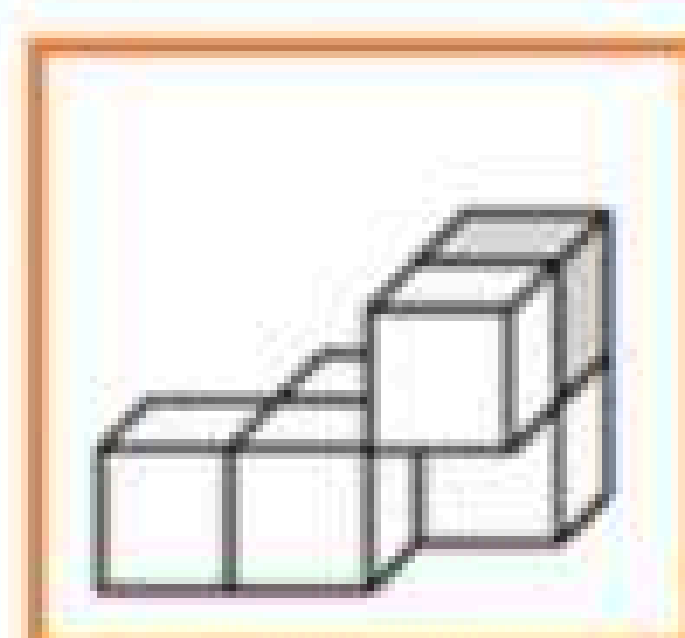
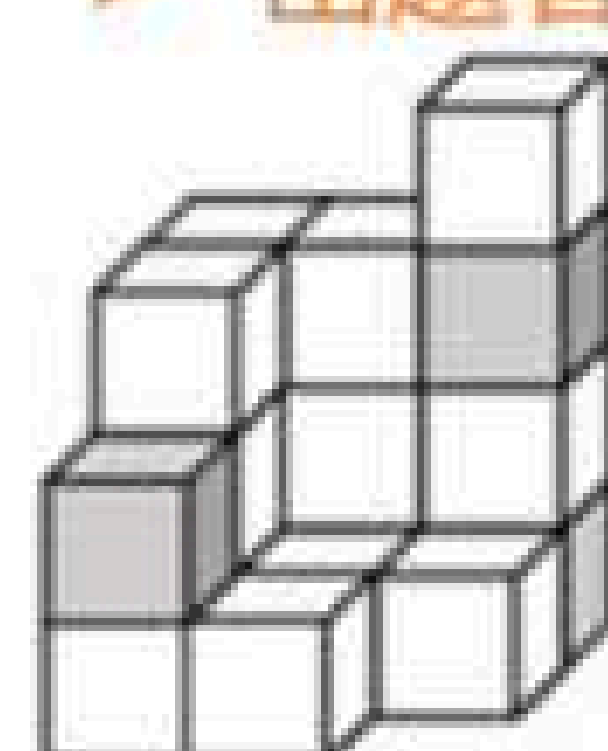
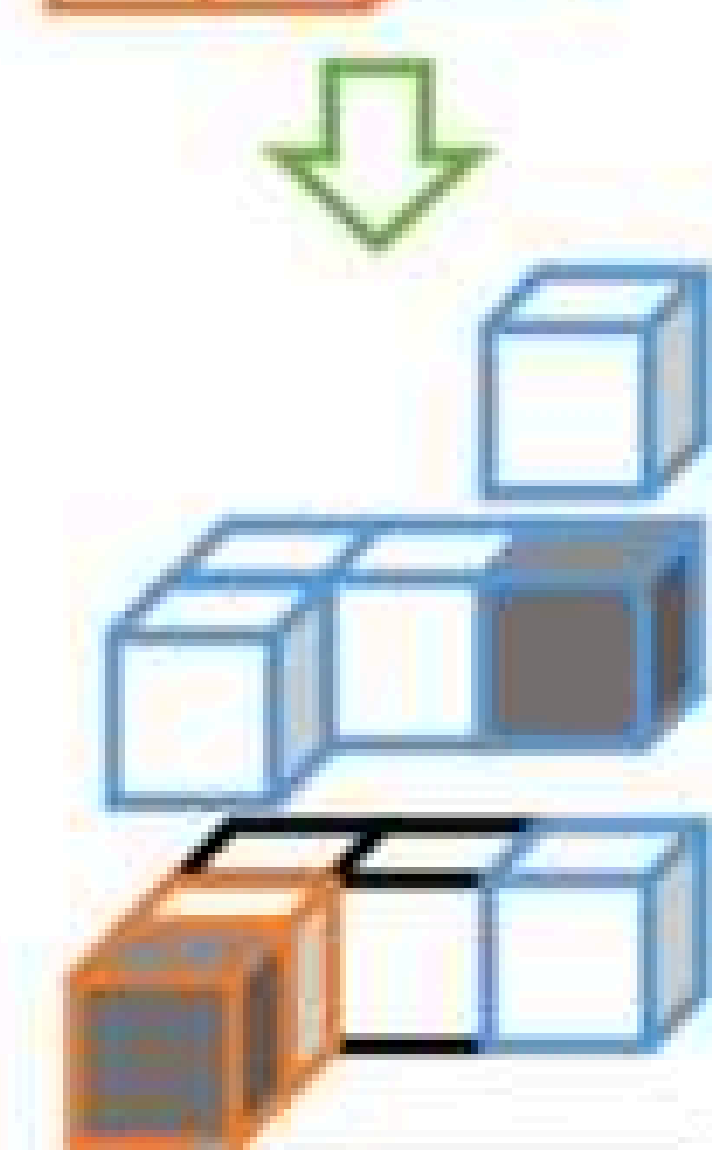
D ✓

➤ 出题者提示? ②和“选项”优先代入哪个?



➤ 代入“A”

➤ 铅笔涂黑



A ✓

B

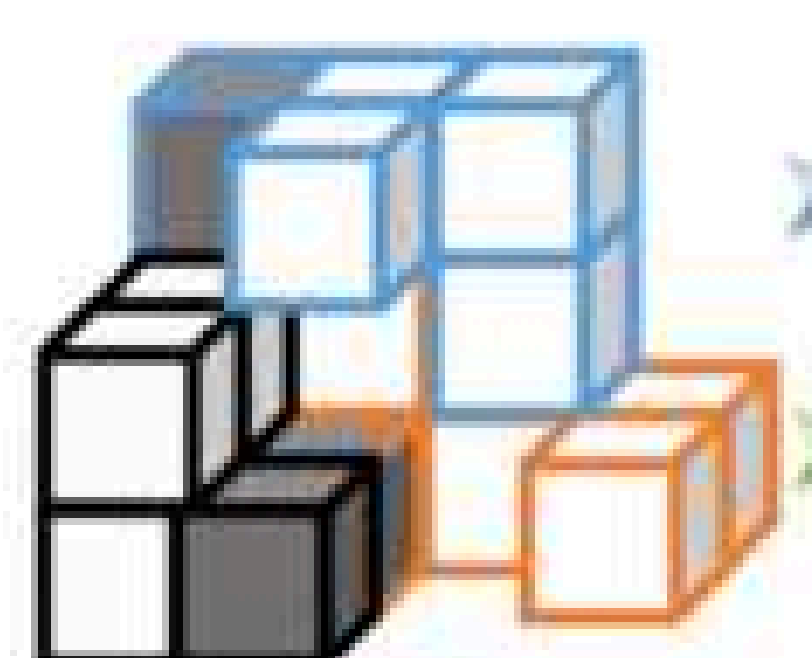
C

D

优先:选项结构一致,且比②大

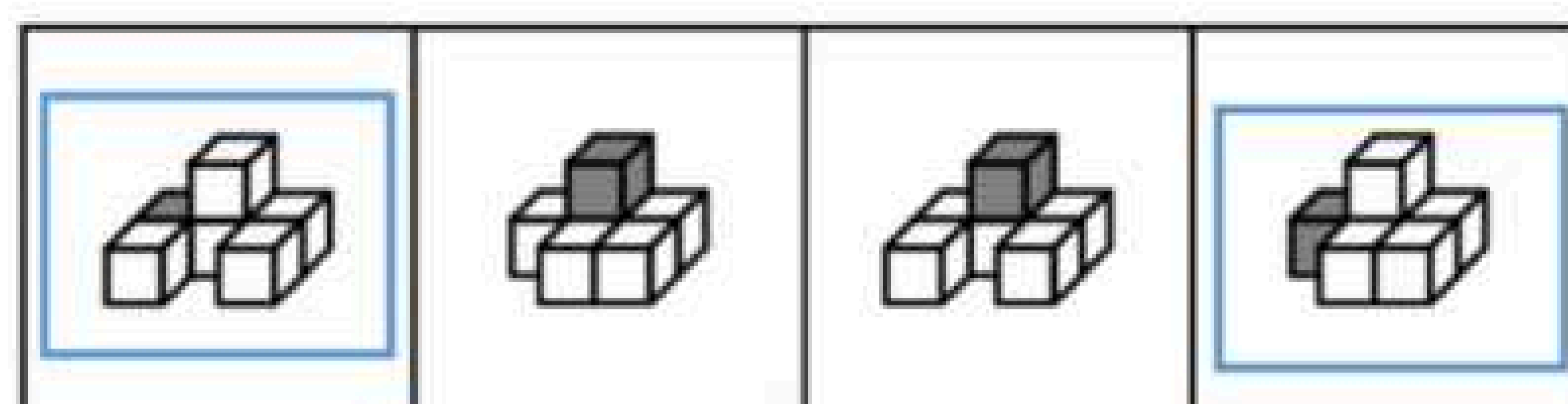
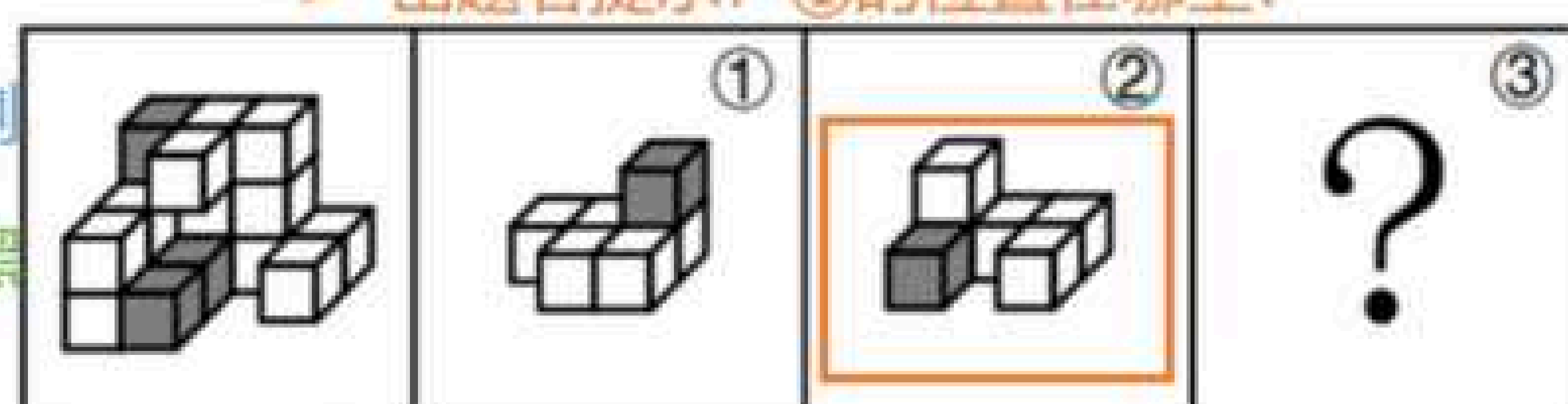
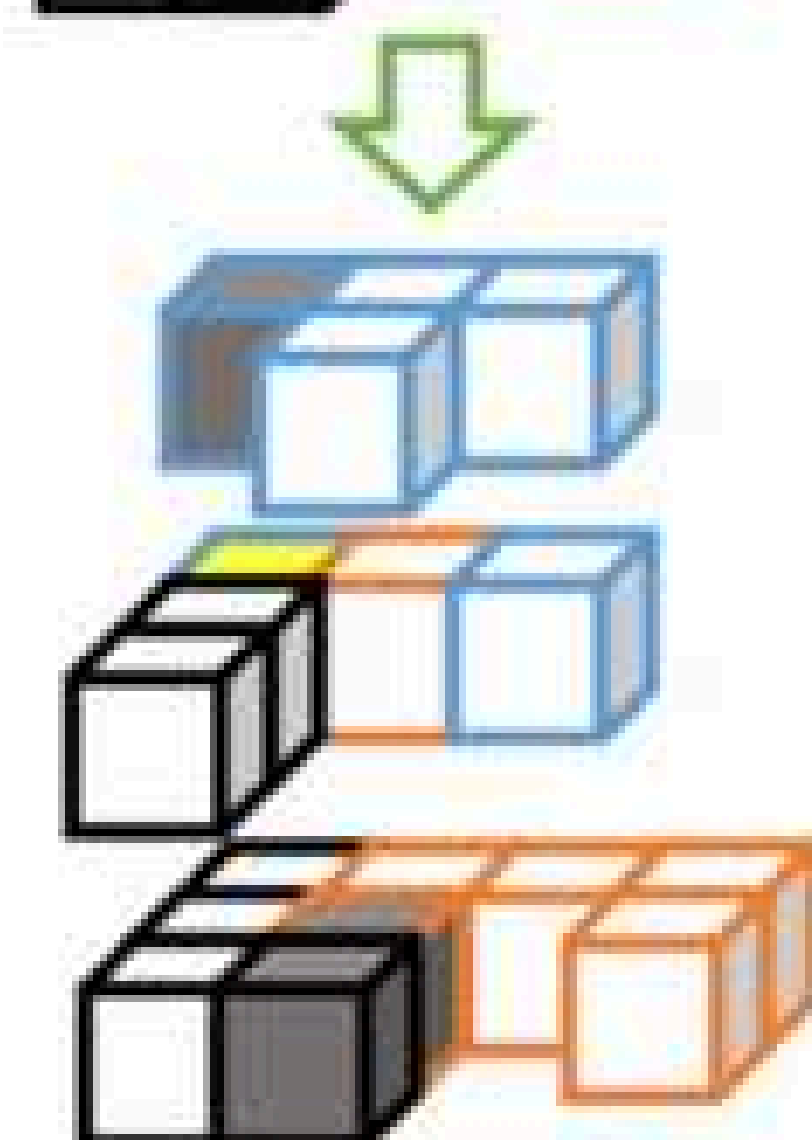
免费学习公众号: 樱有尽有

➤ 出题者提示? ①的位置在哪里?



➤ 合理分割

➤ 铅笔涂黑



A ✓

B

C

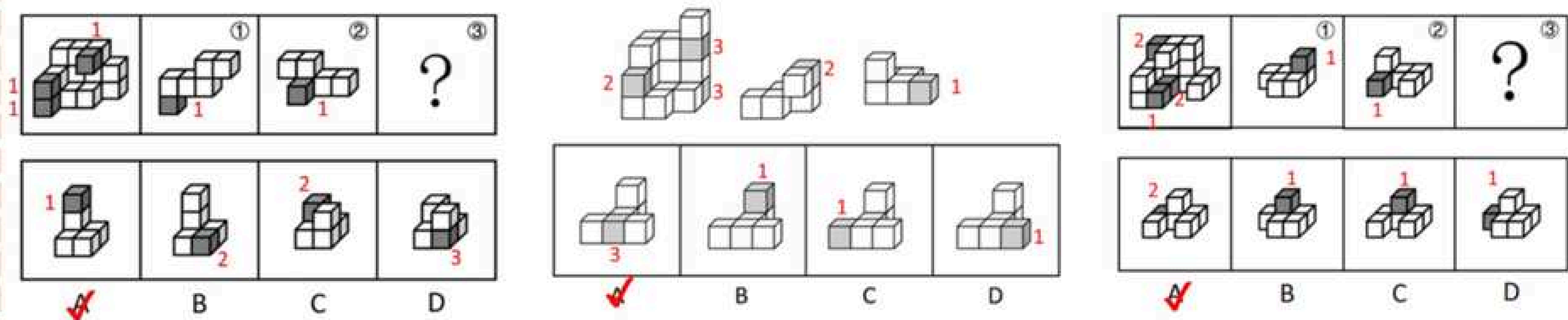
D



立体拼合小结

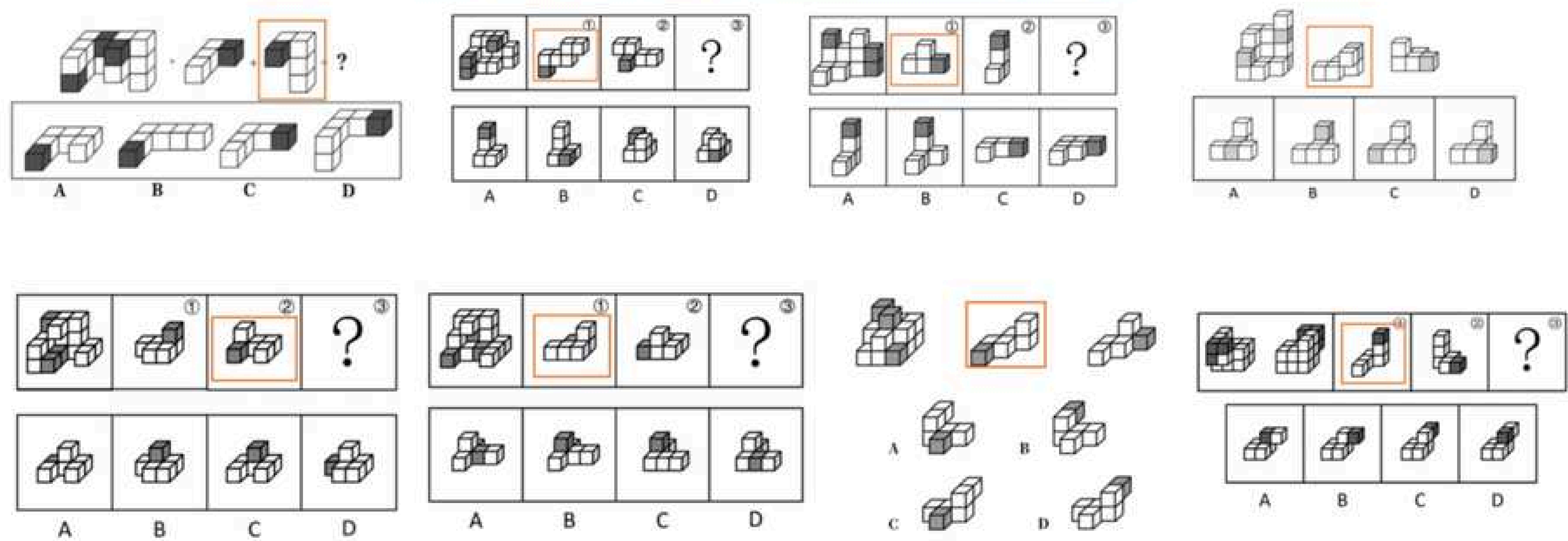
➤ 立体拼合-接触面小结

➤ 黑块与白块的接触面总数（猜测）



➤ 立体拼合-找特殊小结

➤ 考虑找特殊，即找题干中最大或抽象的方块，优先代入



➤ 立体拼合-找特殊小结

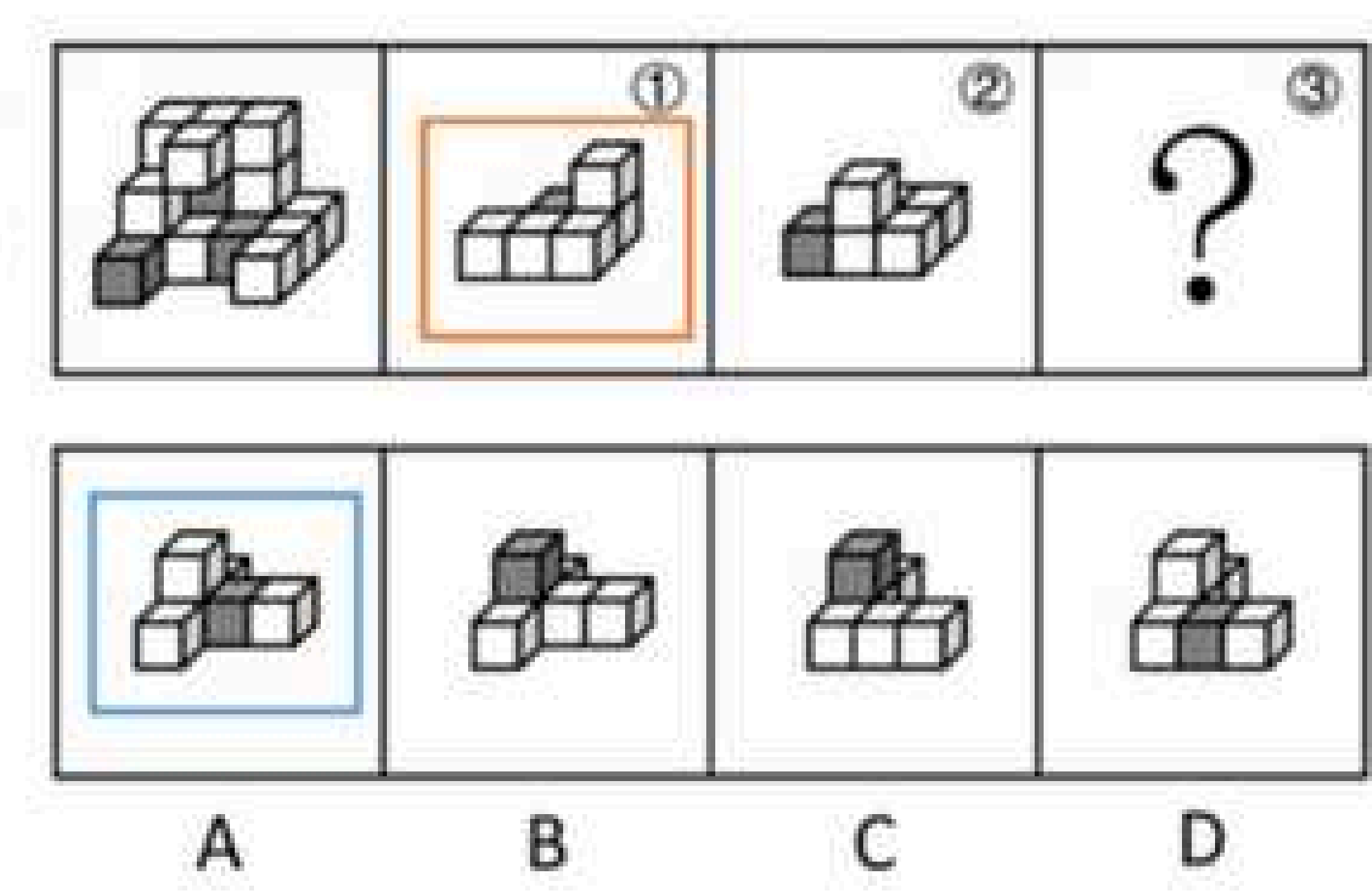
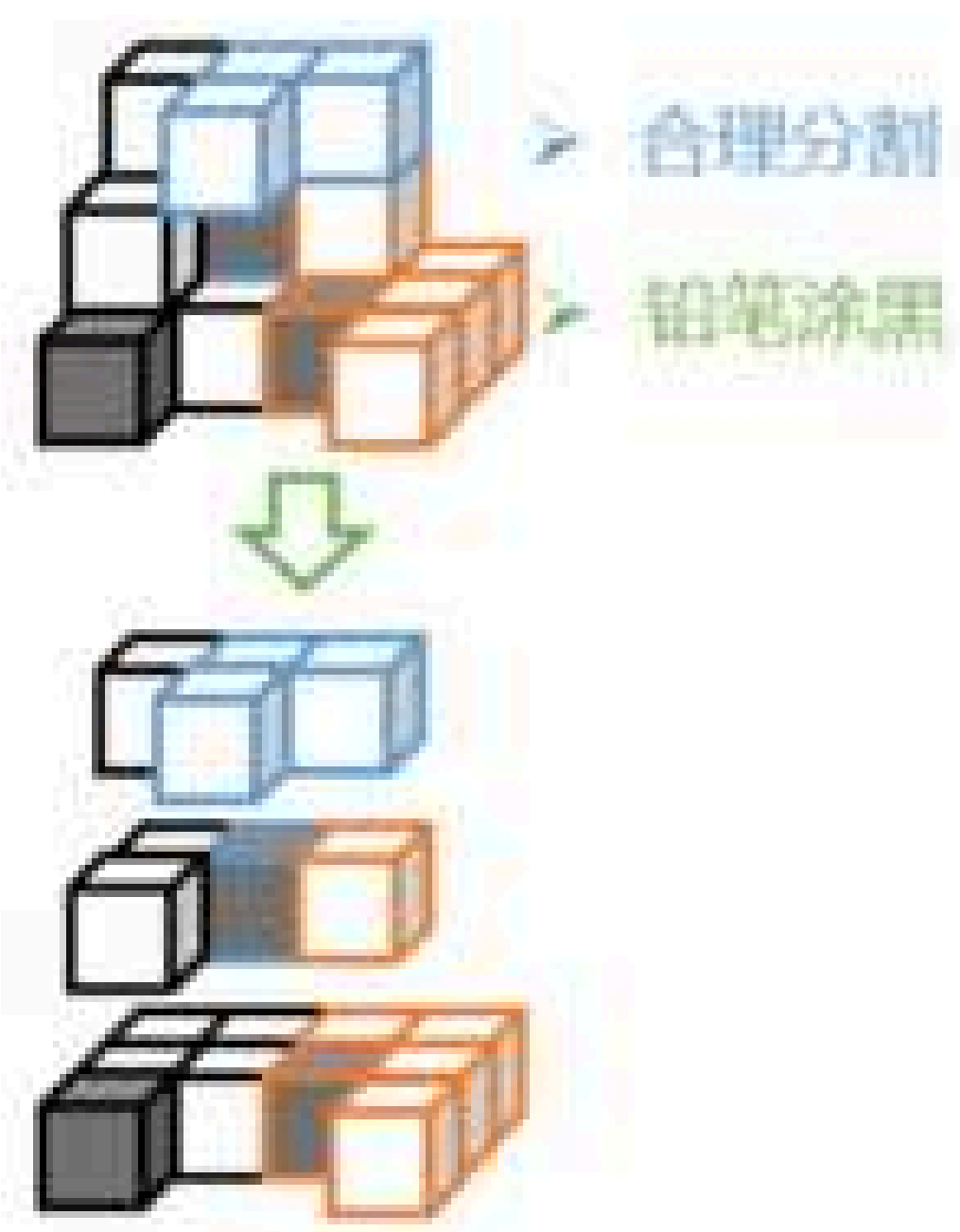
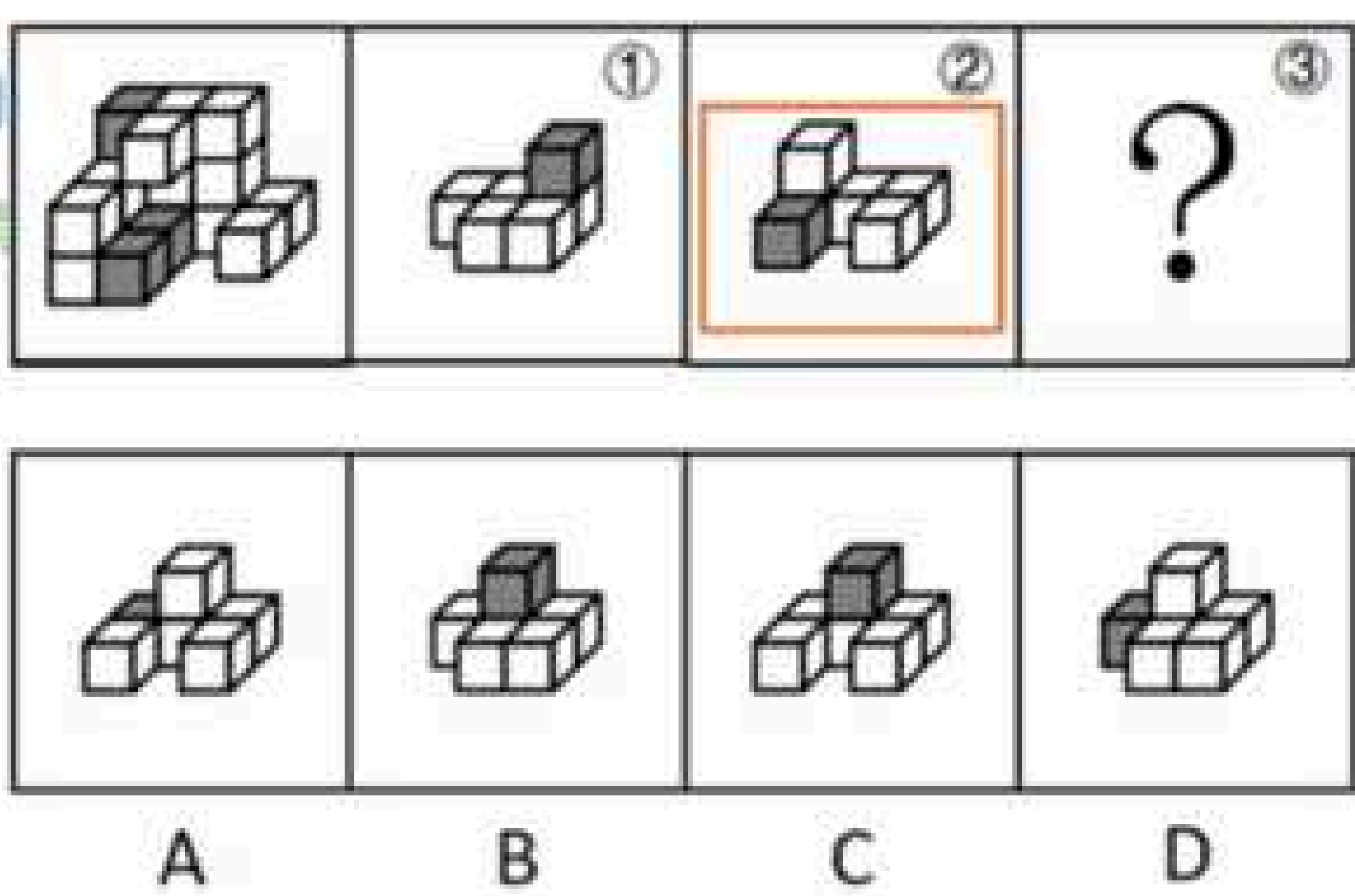
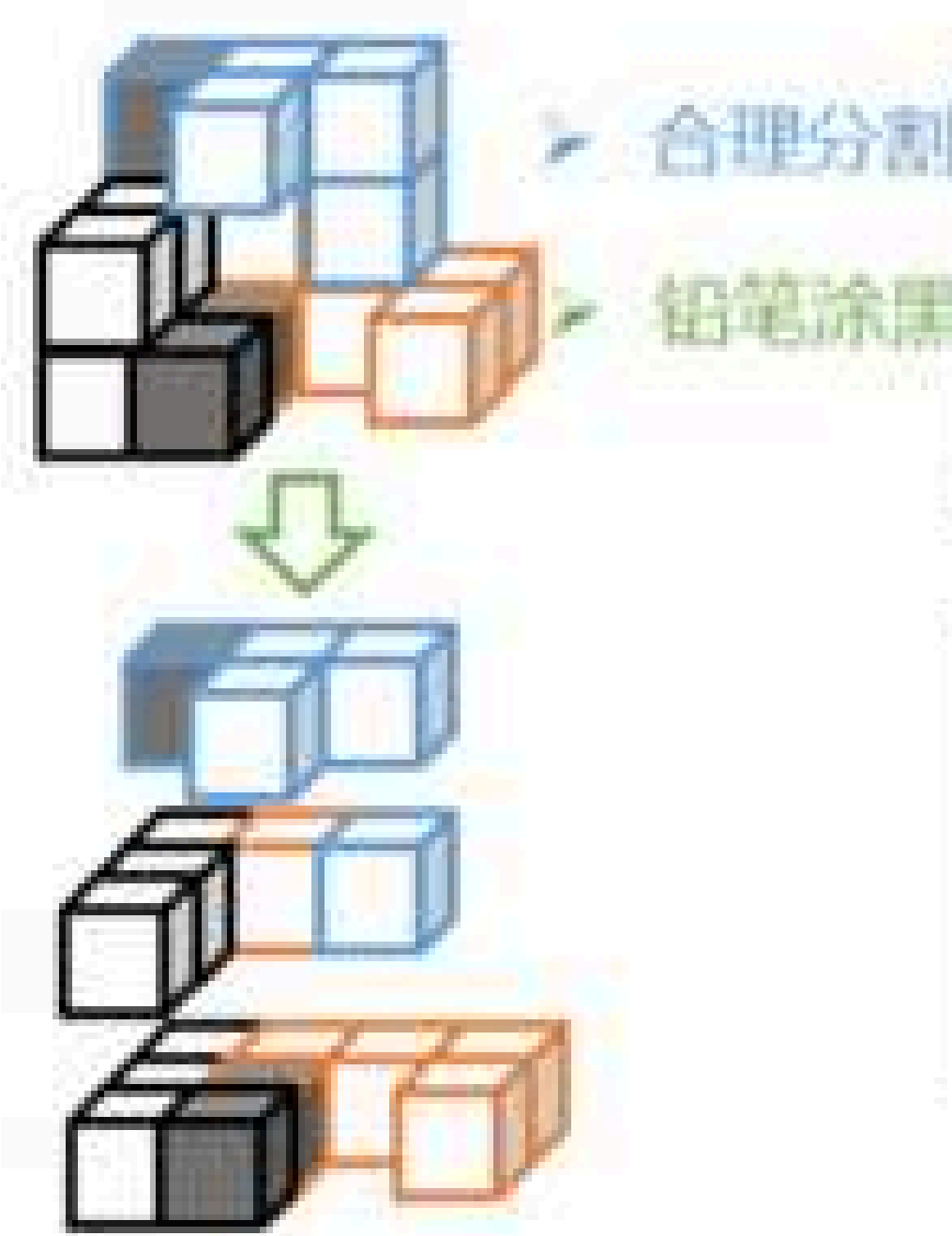
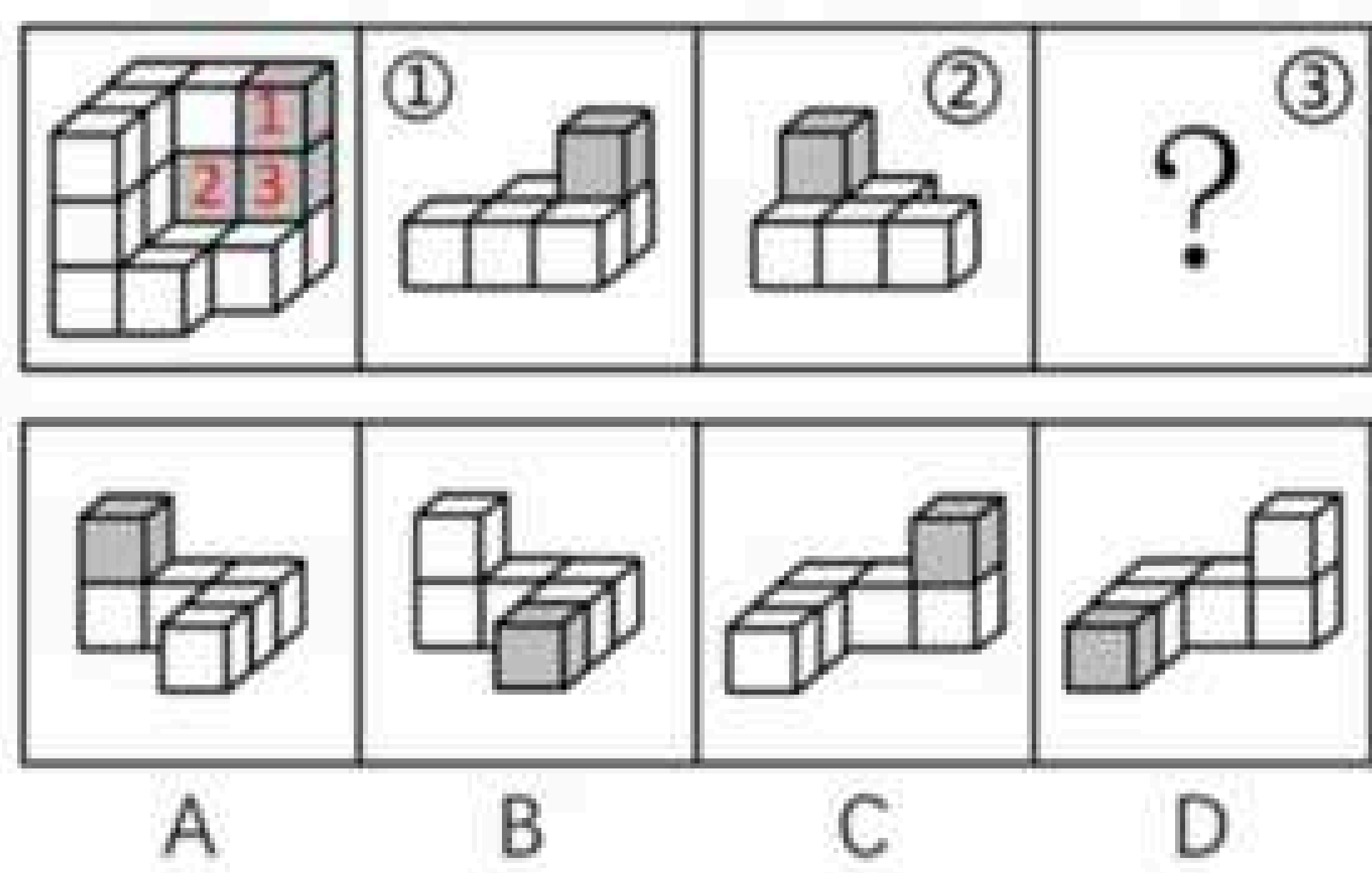
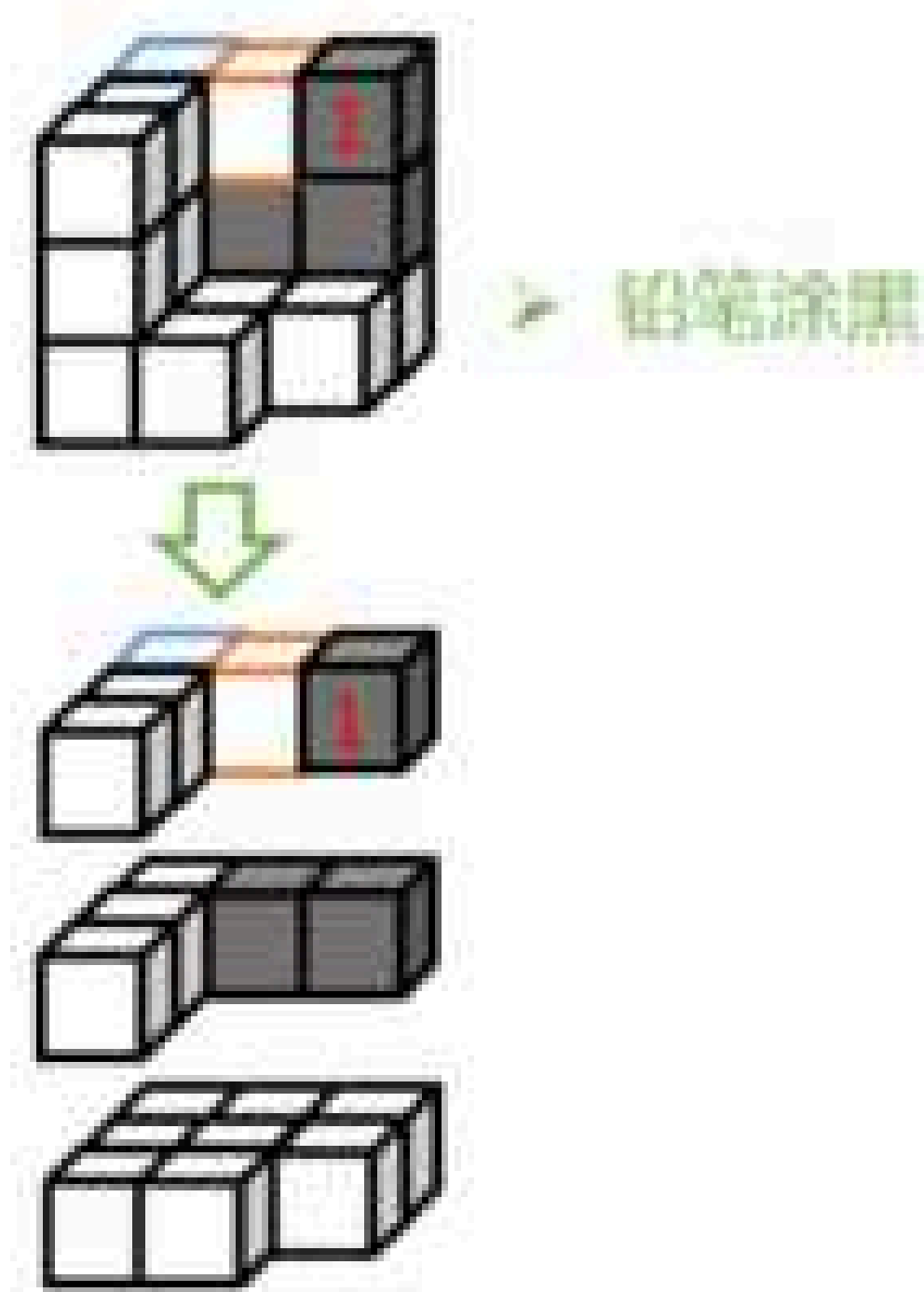
➤ 提示：代入①后，发现②不好代，可以考虑先代“选项”



小红书：@贝栗子

➤ 立体拼合-合理分割小结

➤ 合理分割（黑块跟几个白块相连-合理性）

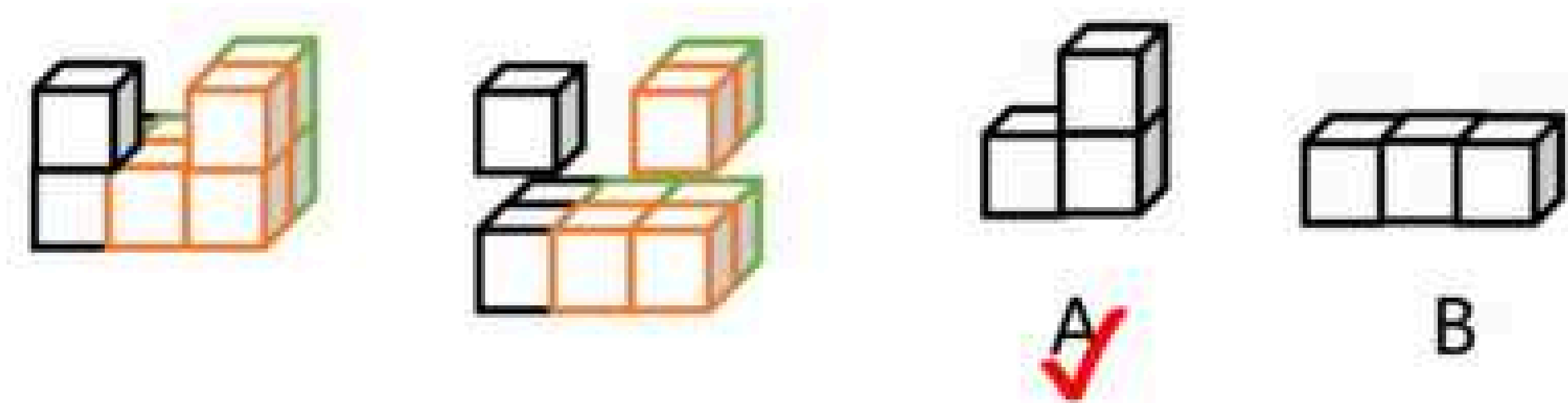


来源于小红书@贝栗子

破解出题者“小心思”

立体拼合-几个一样

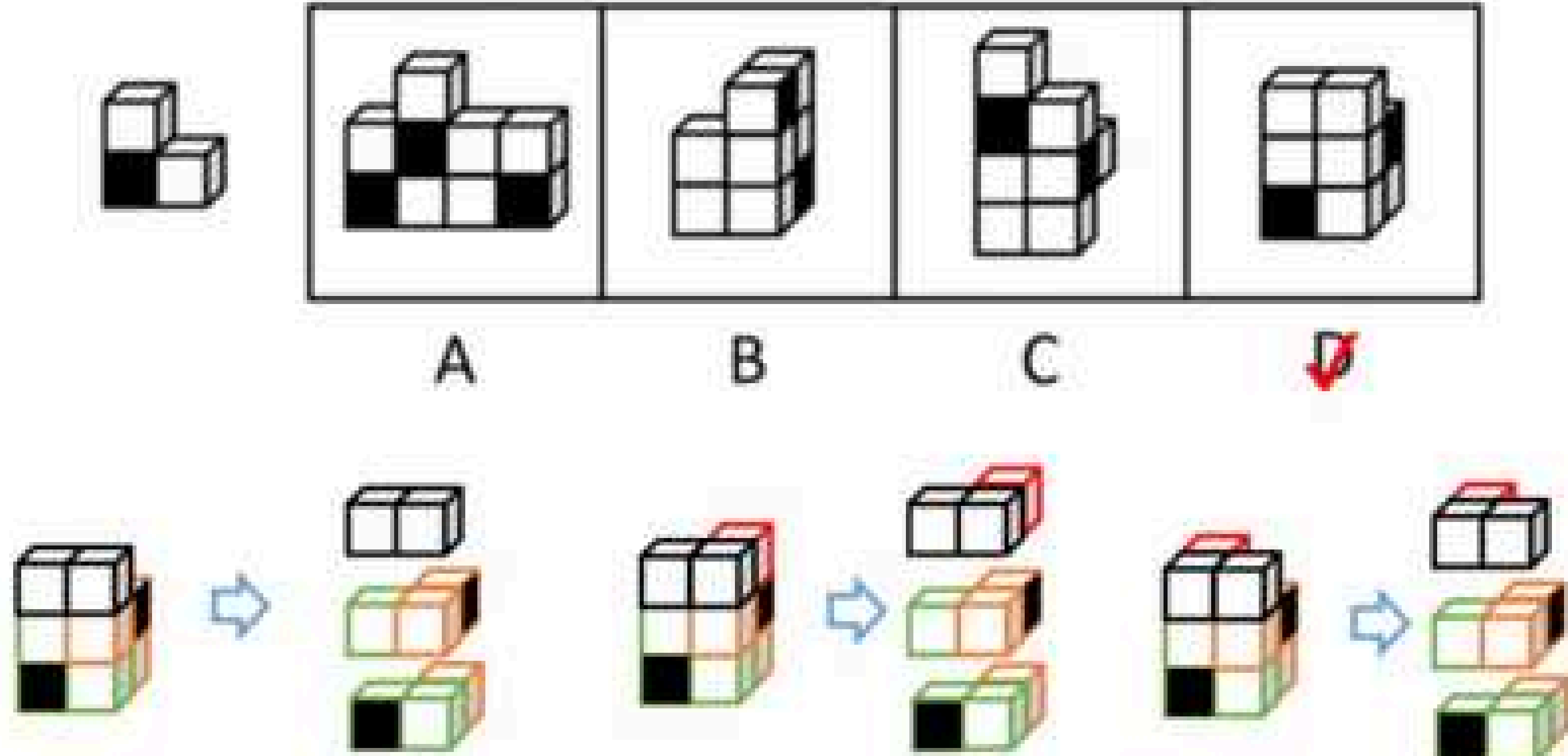
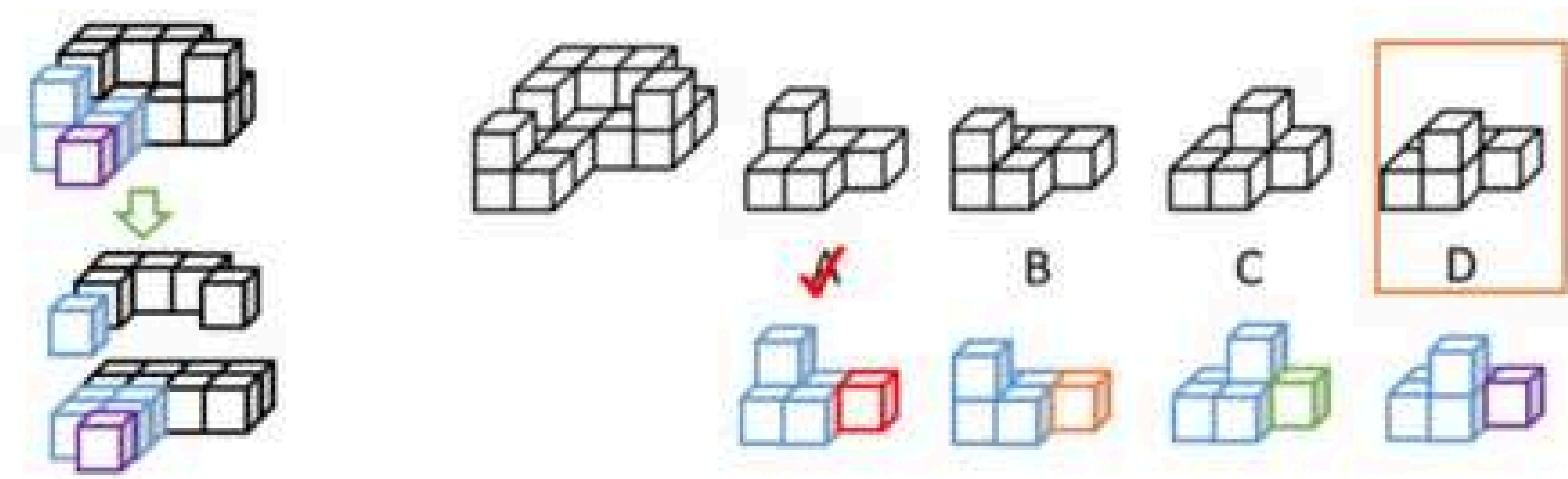
➤ 加密：多面体可以切割为3个完全相同的小多面体



➤ 解密：找特殊，直接代入选项

➤ 立体拼合-几个一样小结

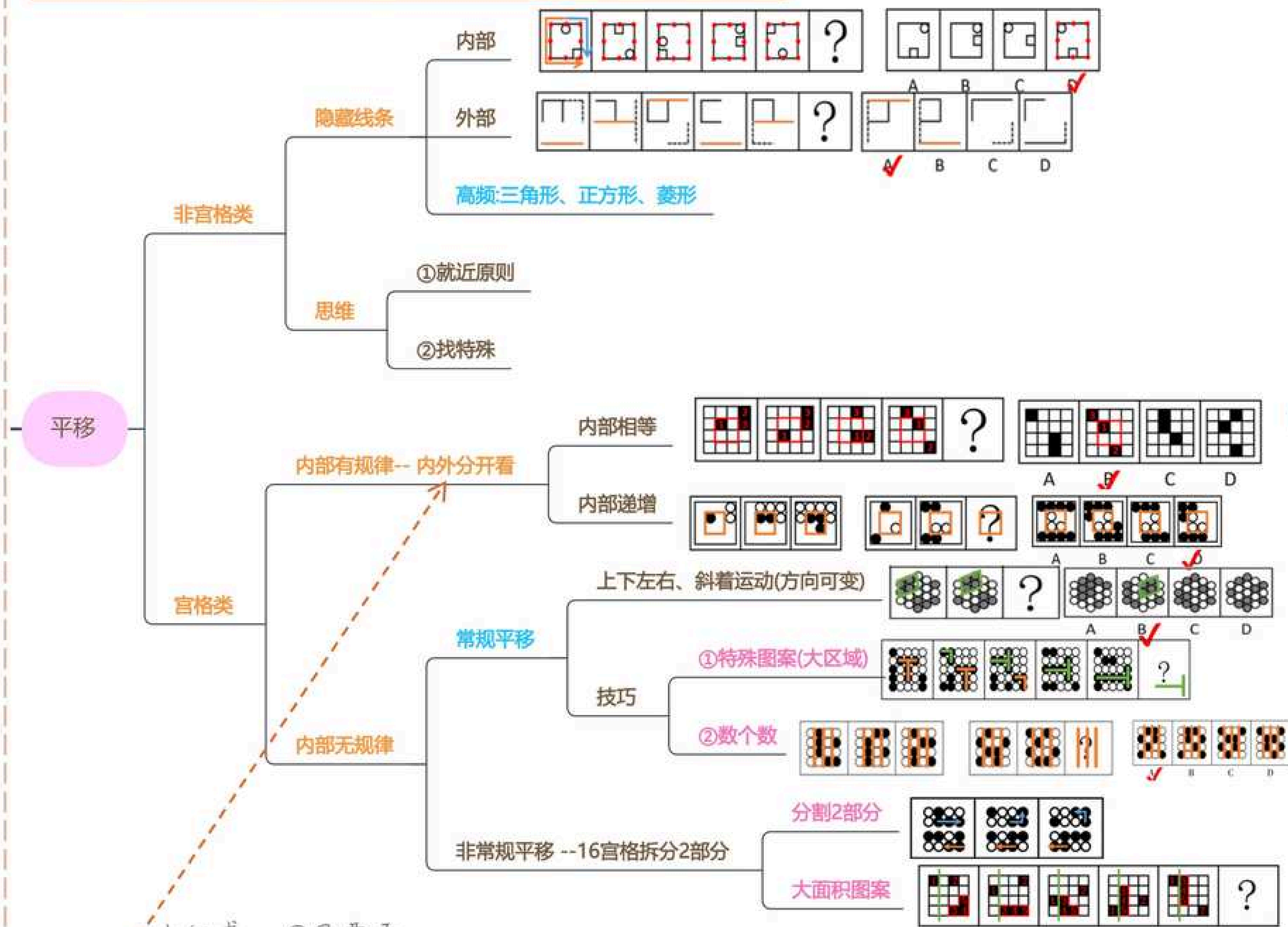
➤ 解密：找特殊，直接代入选项





第九节：图推思维导图串讲

有一样的图案--完全一样--位置

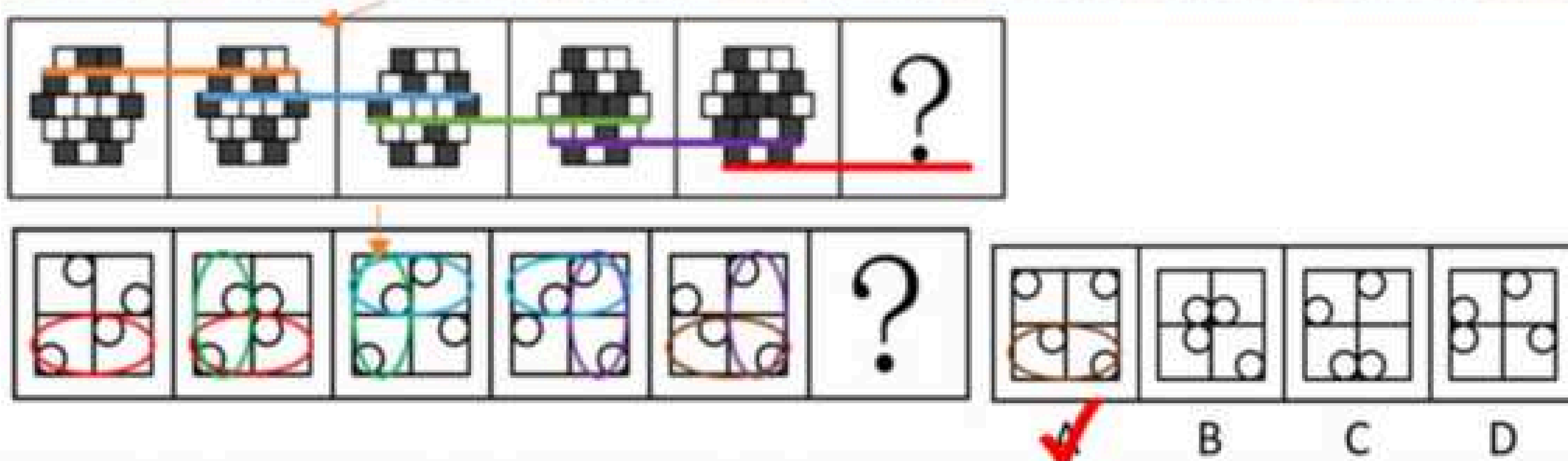


小红书：@贝栗子

相邻比较

①有黑块不动

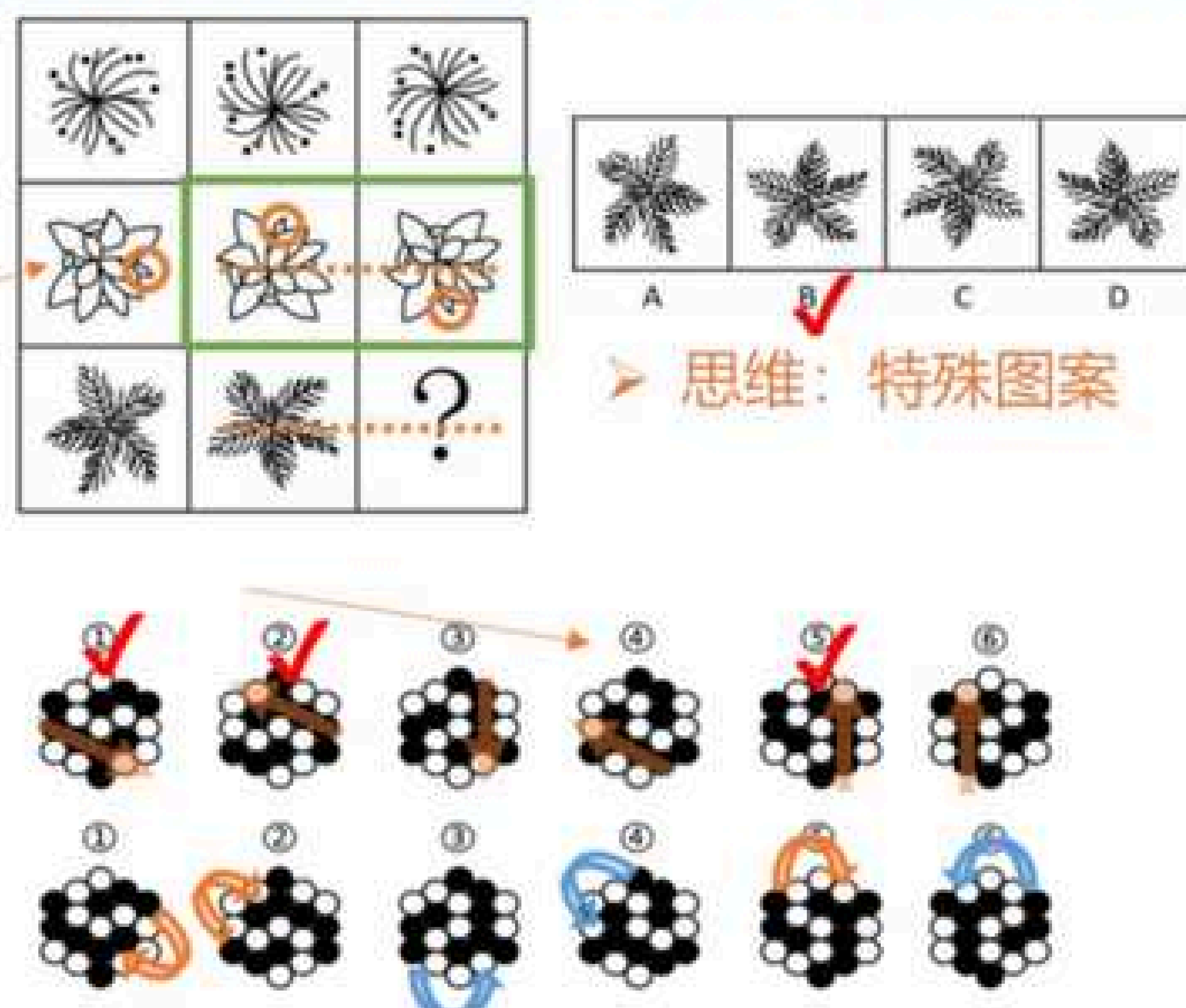
②平移没规律



旋转/翻转

①特殊图案(大区域)

②时针法、箭头法

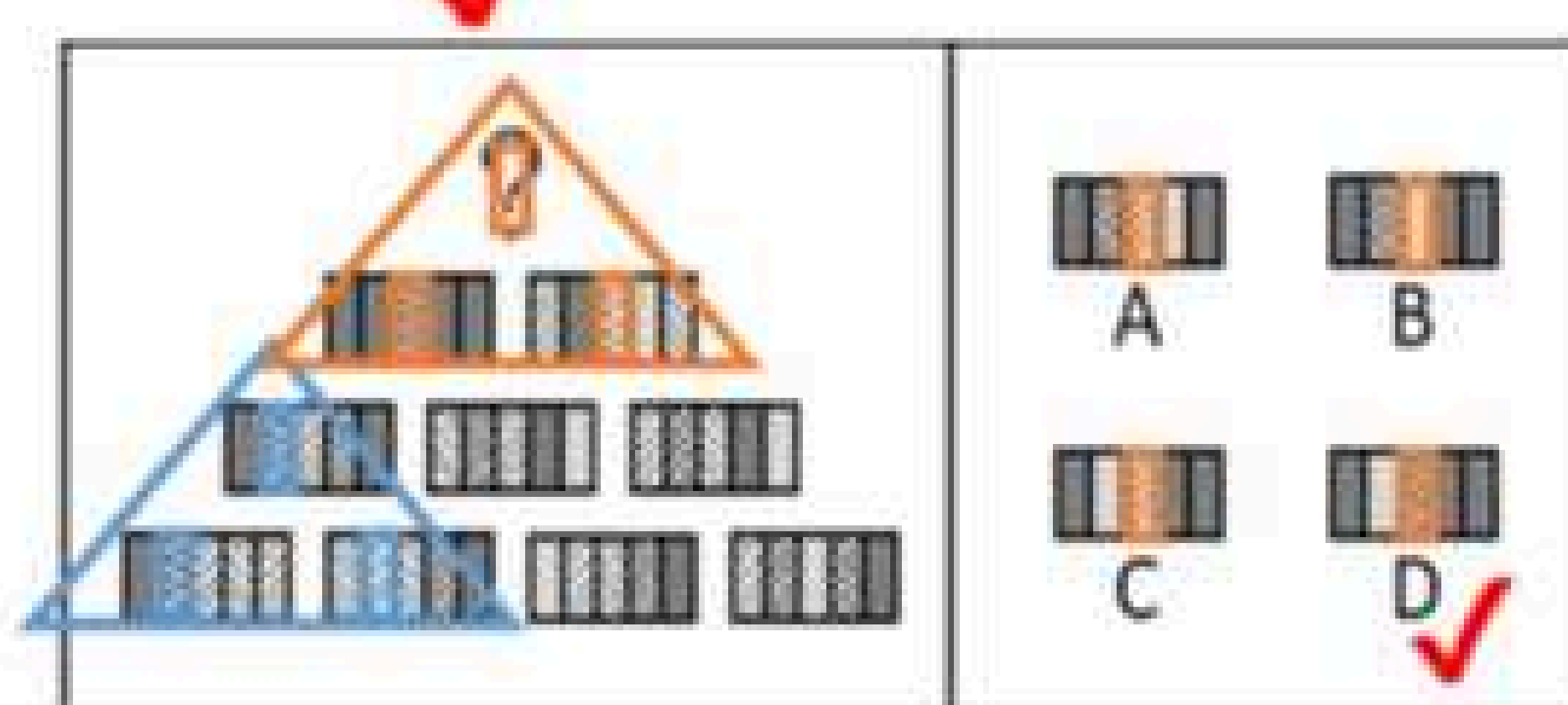
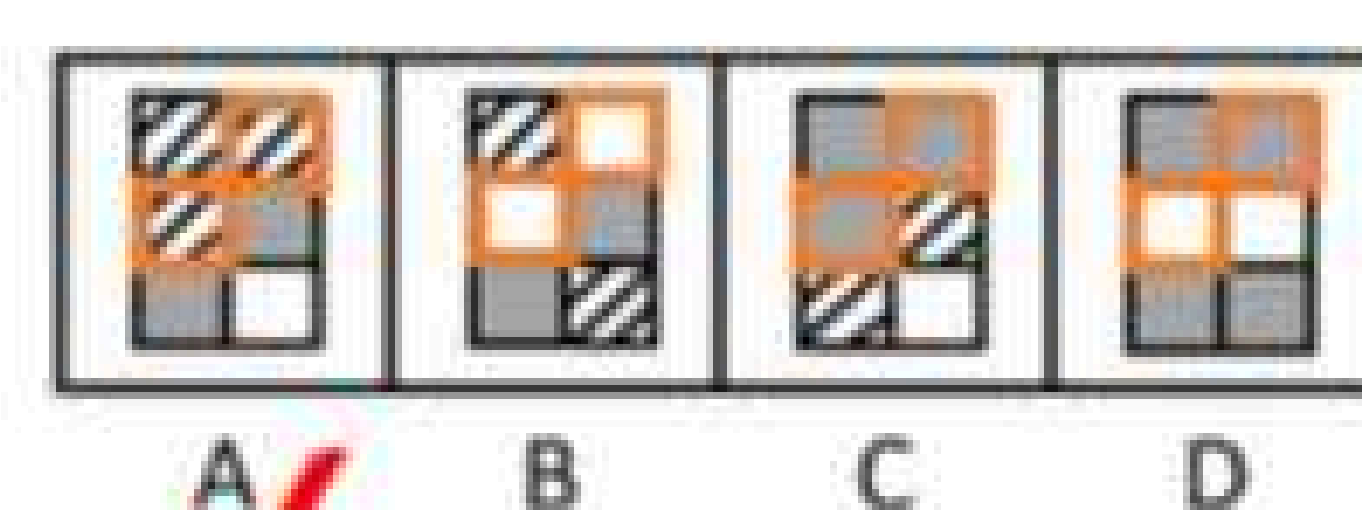
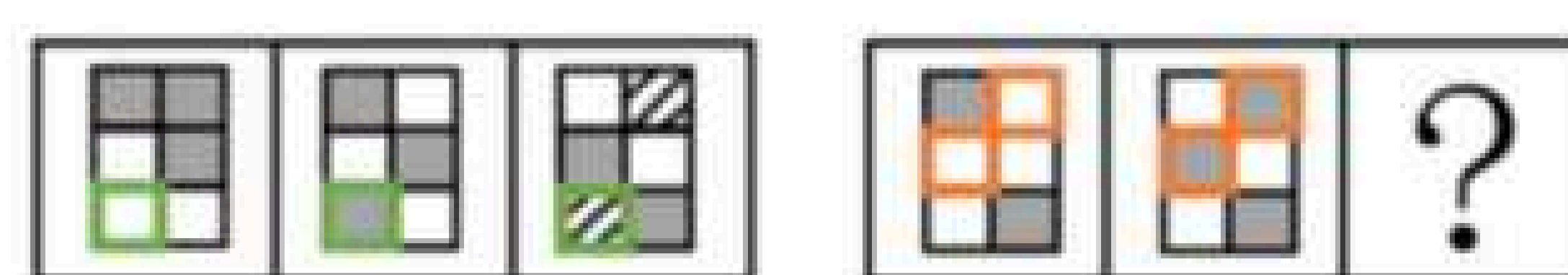
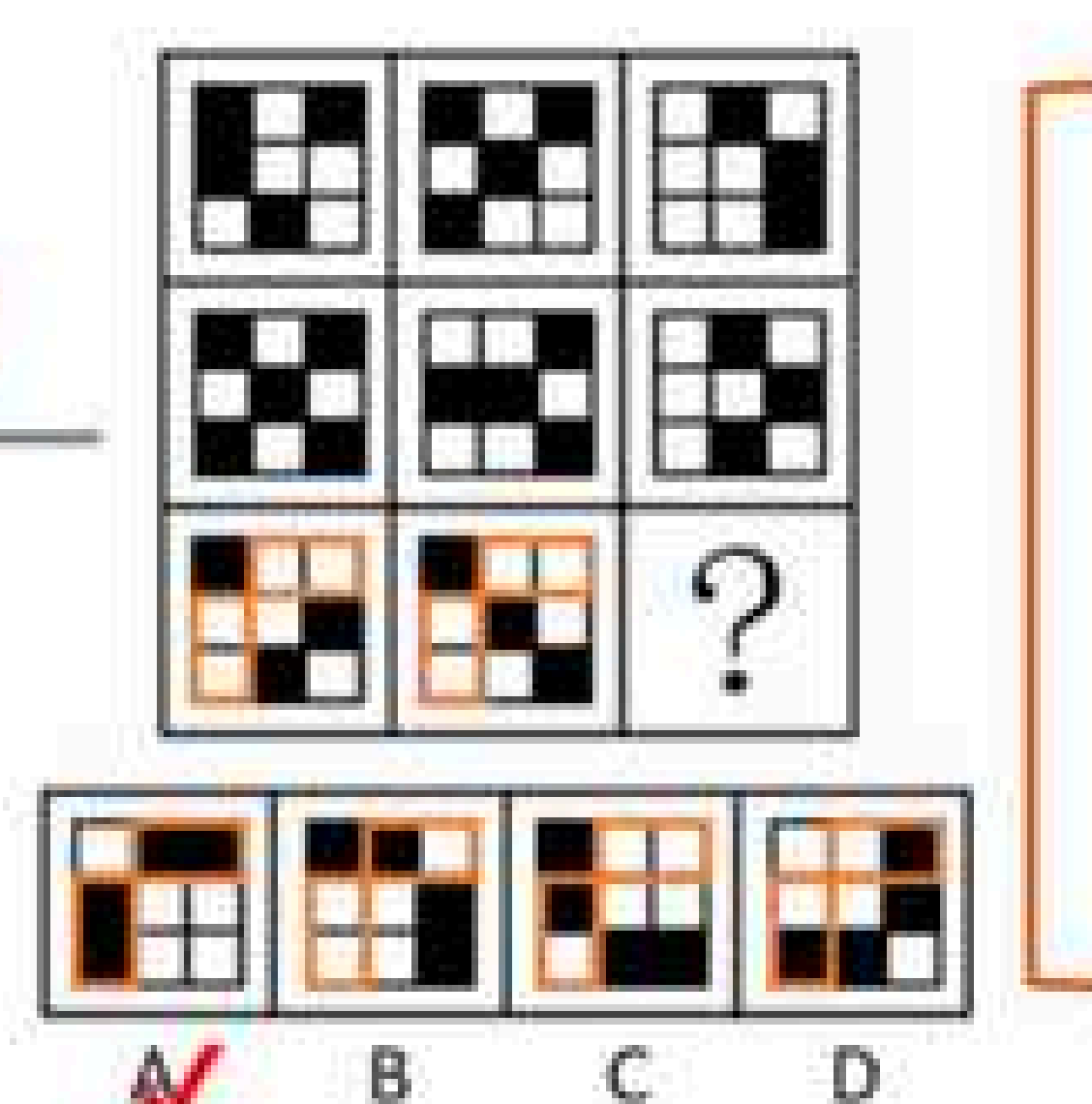


思维：特殊图案

有一样的图案--部分一样--样式

黑白运算

技巧:相同区域/对比选项



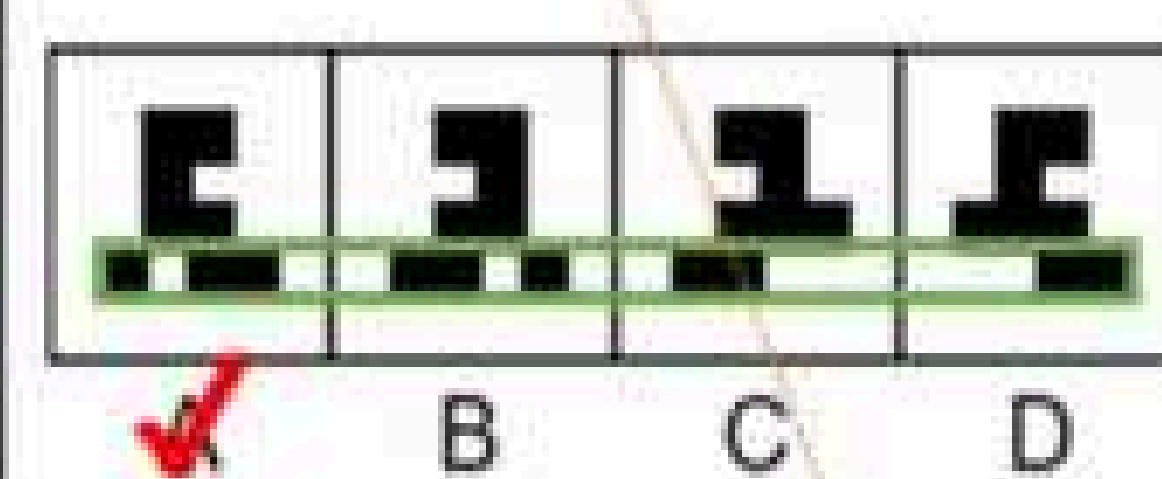
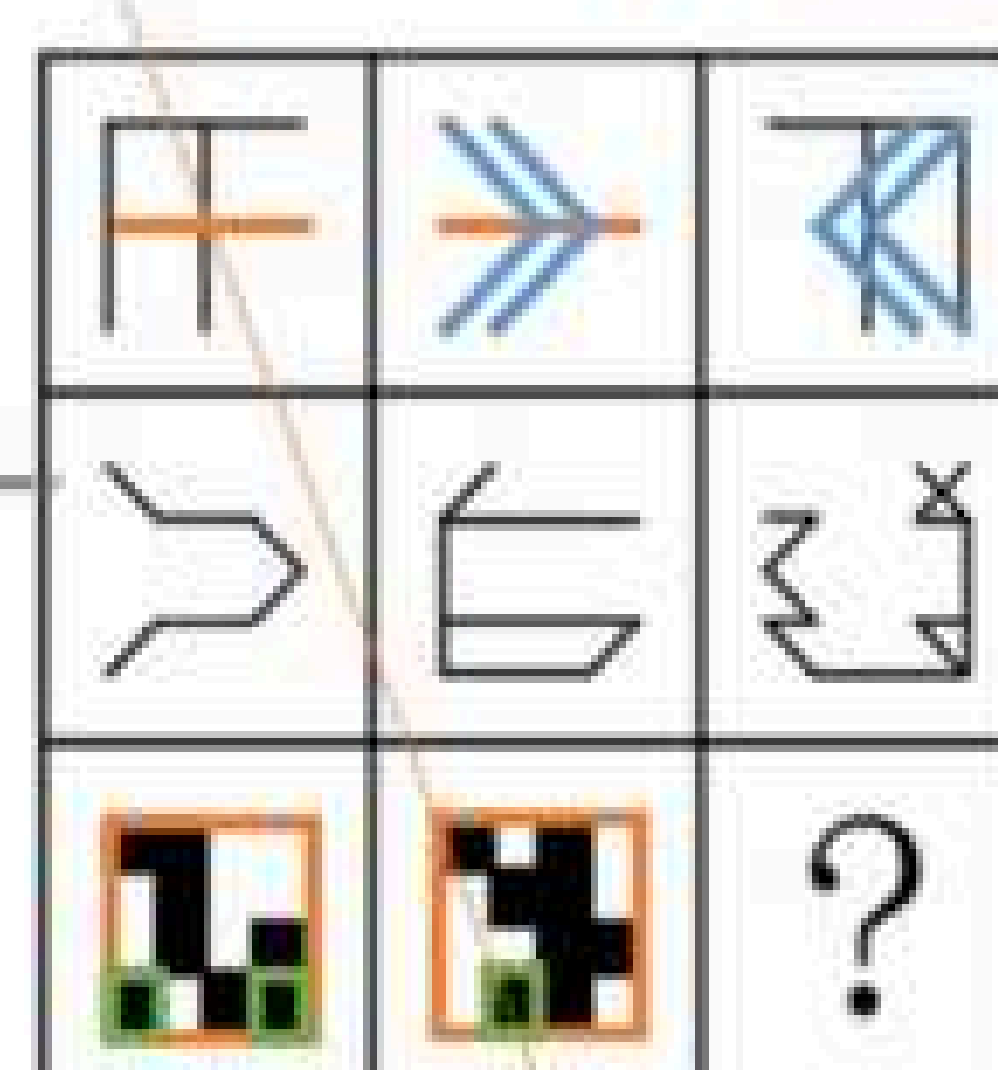
题型创新

加减同异

先看图1
图2相同线条

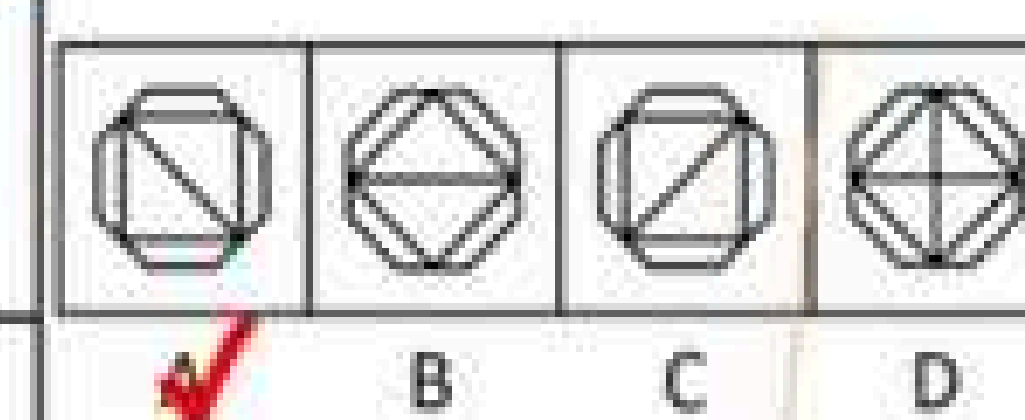
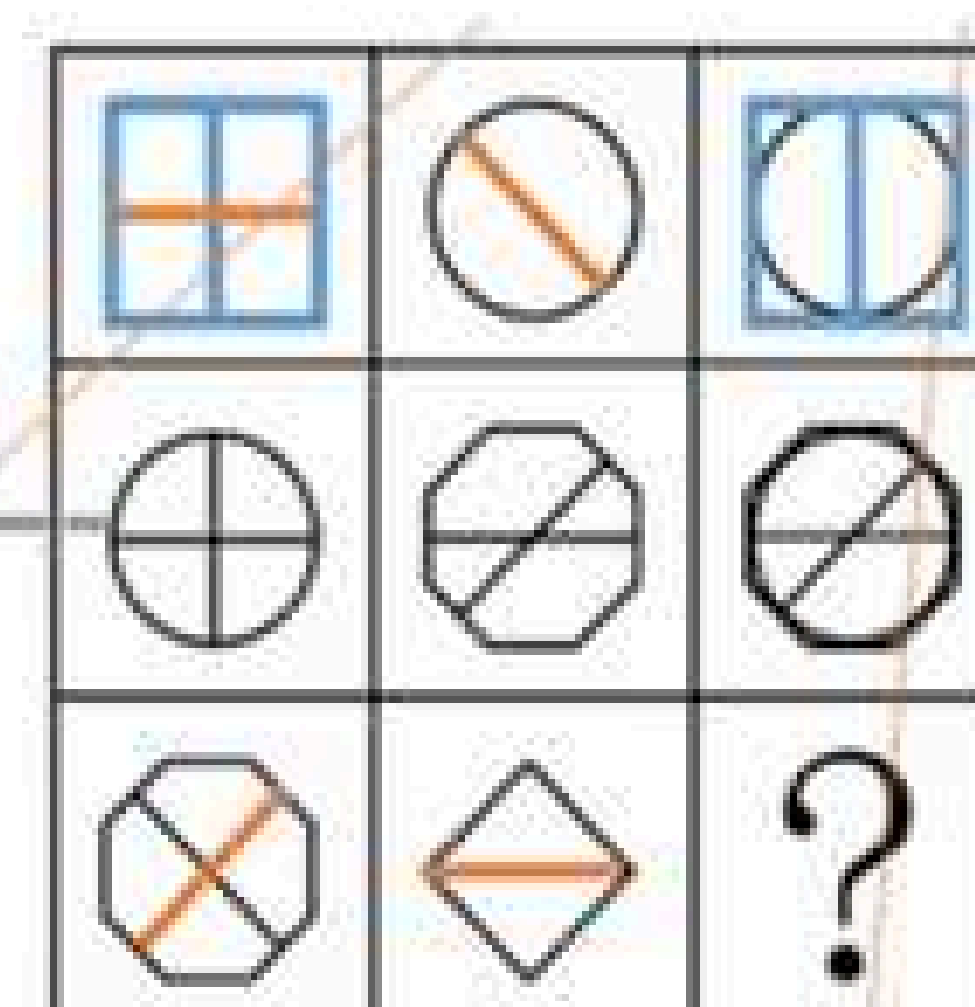
有相同
先运算

可能图3动

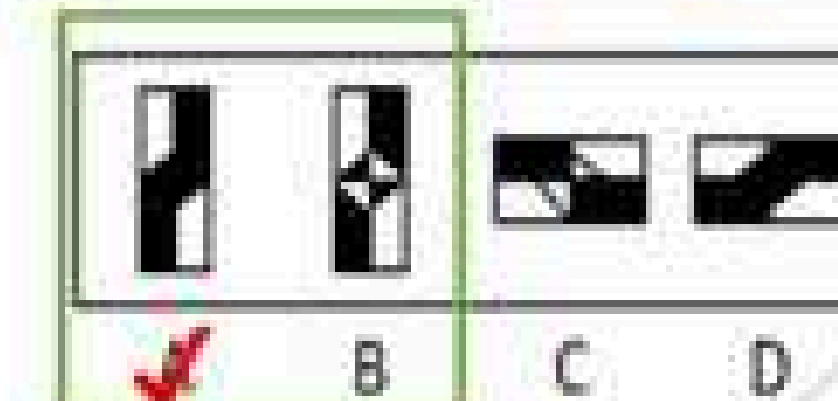
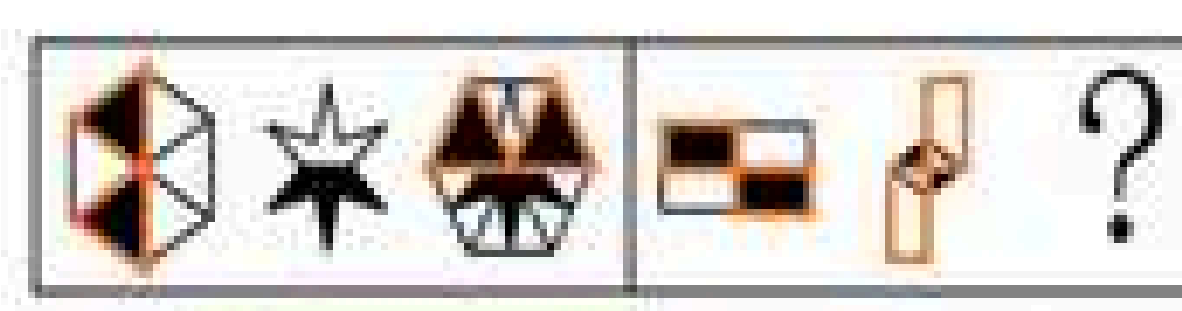


无相同
先旋转

13-样 -- 图2动



23-样 -- 图1动

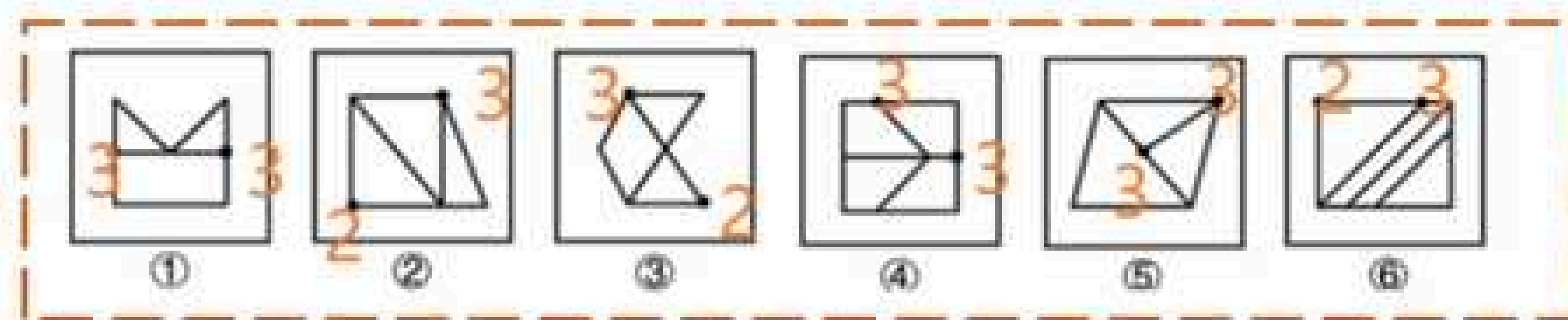


难点3: 图1动
叠加关系

有一样的图案--部分一样 -- 标记

位置

上、下、左、右、内、外



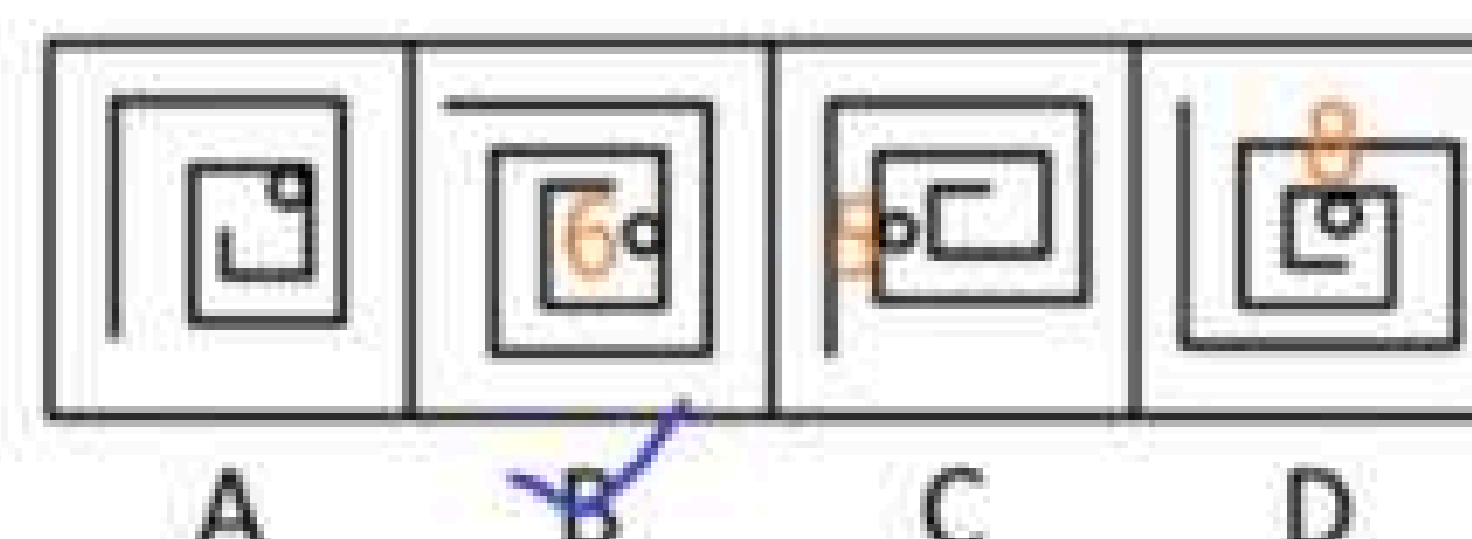
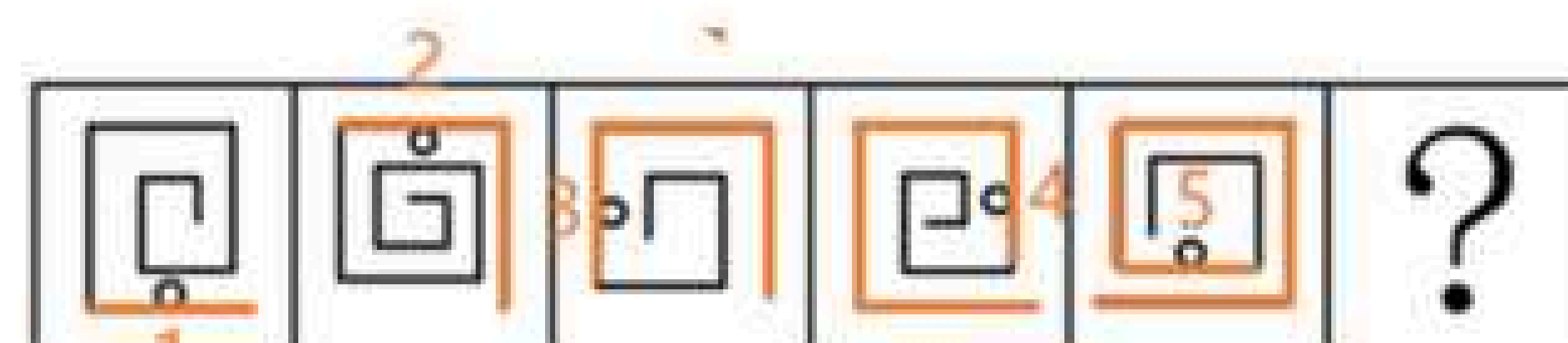
点

曲直性、引发的线条数量



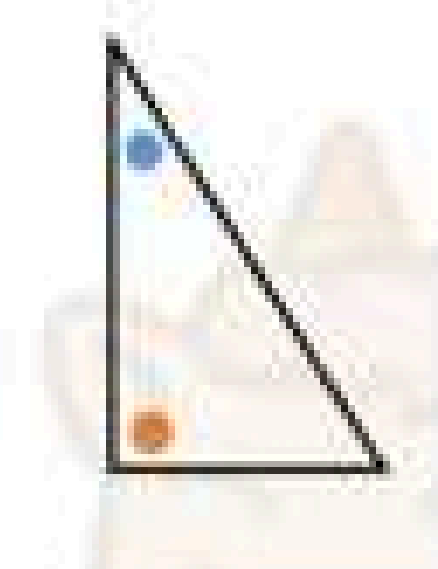
线

直线/曲线、最长线/最短线、线的位置



角

直角/锐角/钝角、最大角/最小角



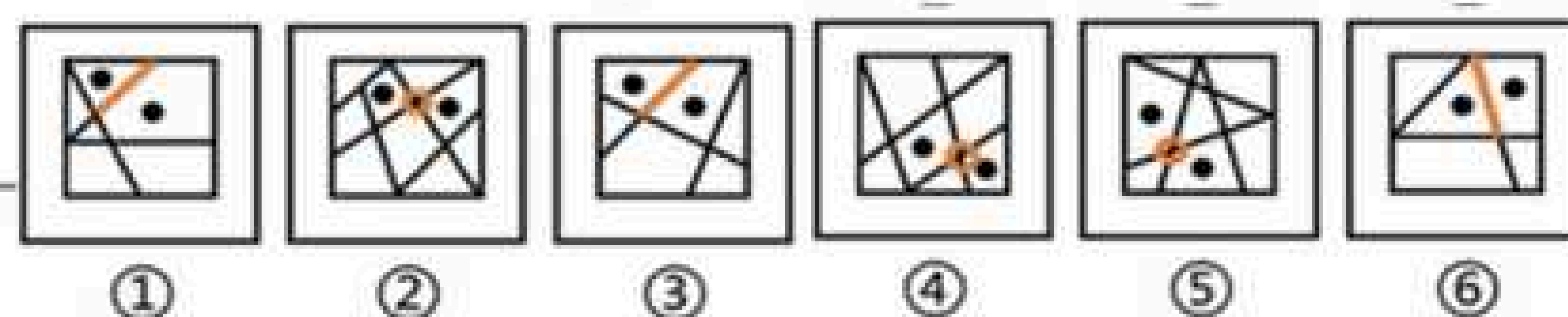
图形

面

单独面/相交面、相同区域/不同区域、形状、属性、面积

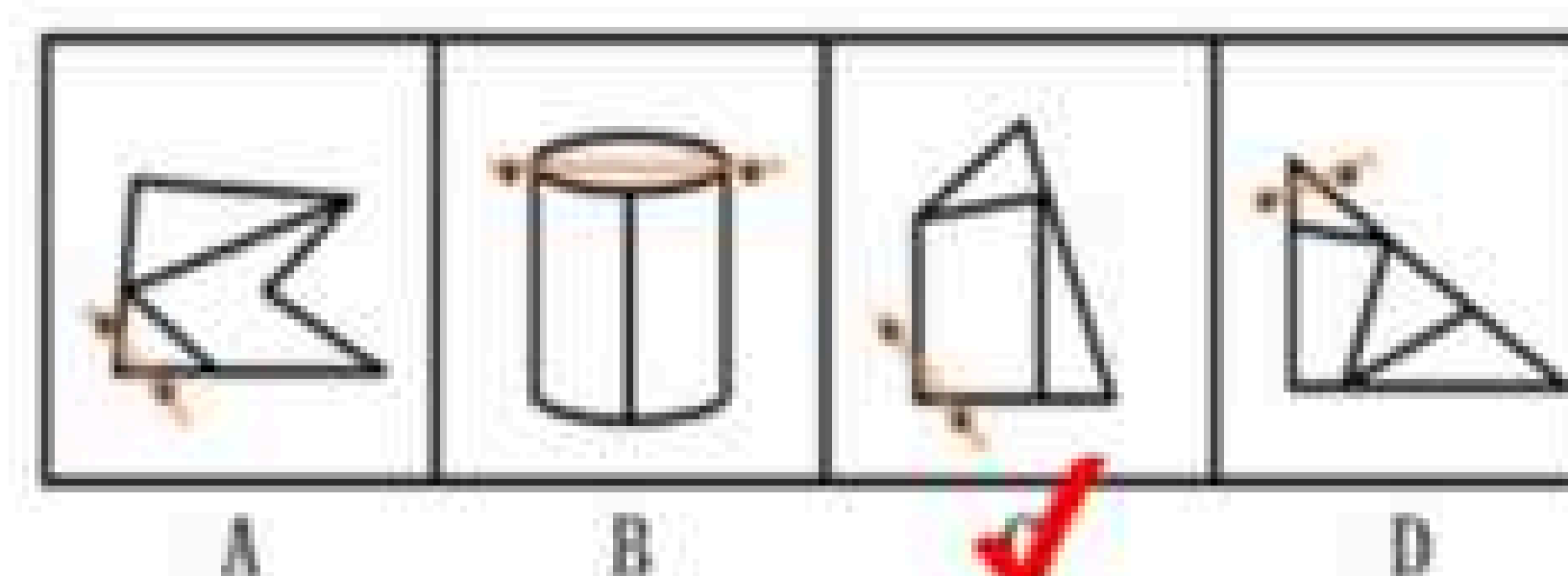
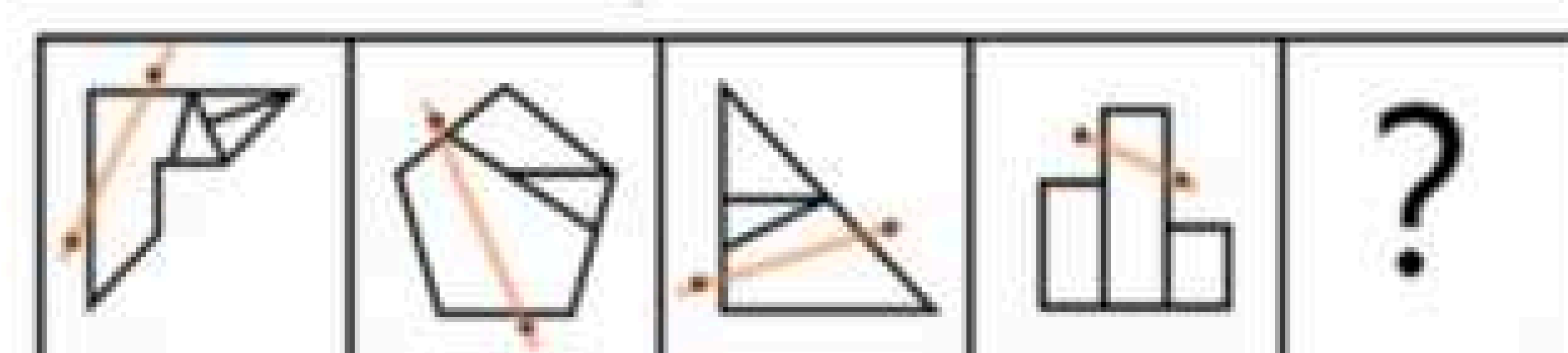
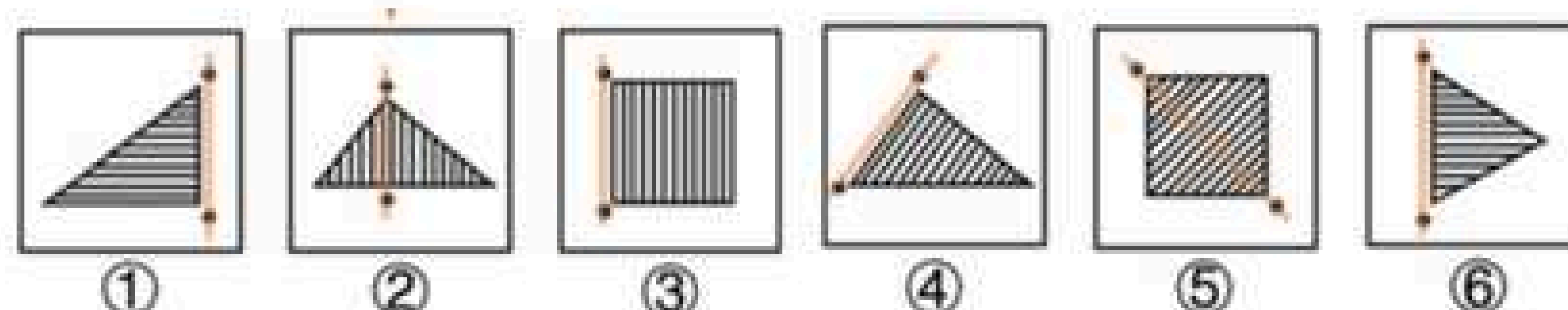


标记物之间的比较,



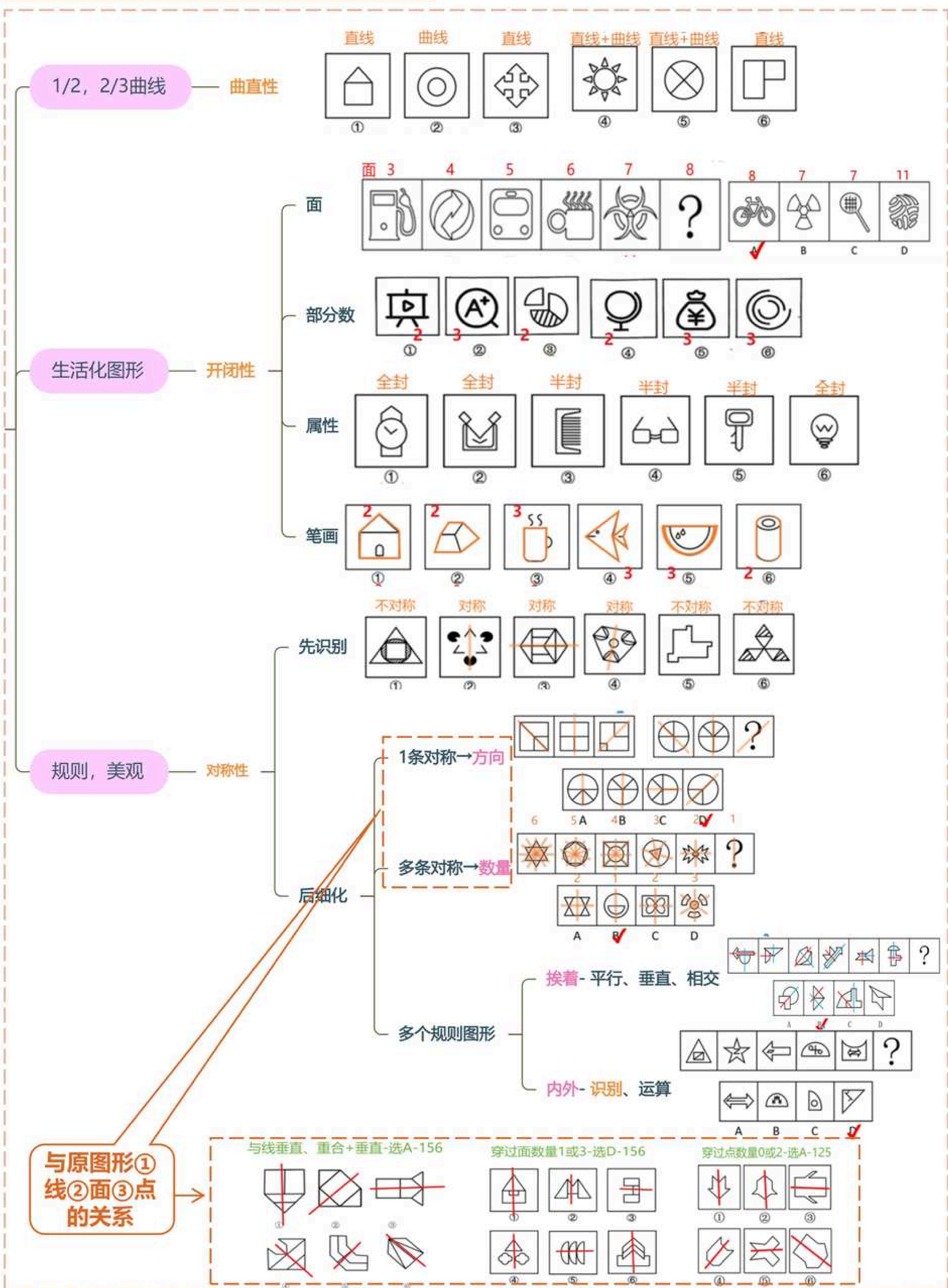
多个标记

连线后与原图关系



都有小图案标记

没有一样的图案--【1】属性



没有一样的图案--【2】数量--基础

面、笔画、点混淆

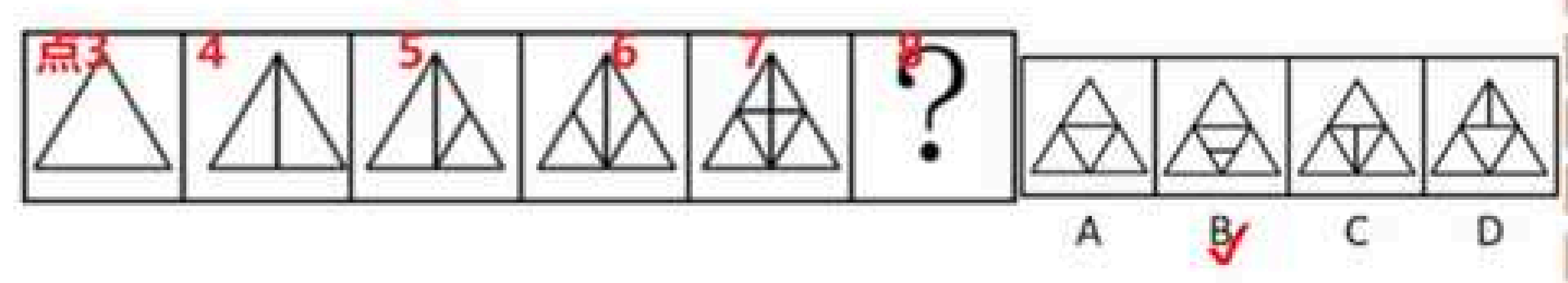
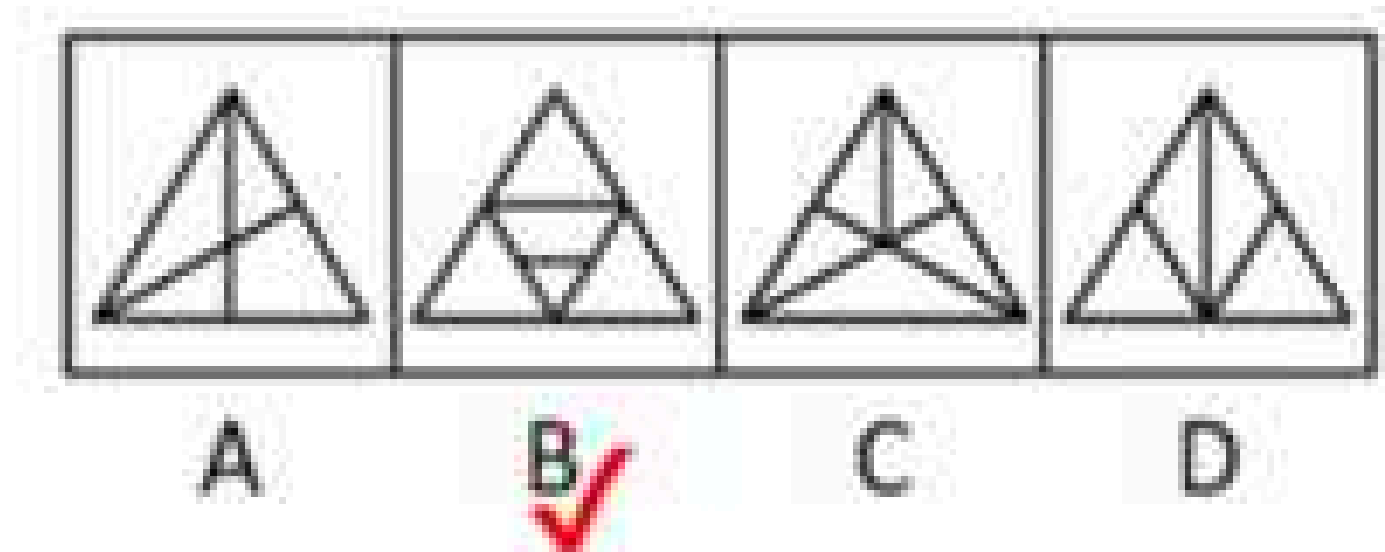
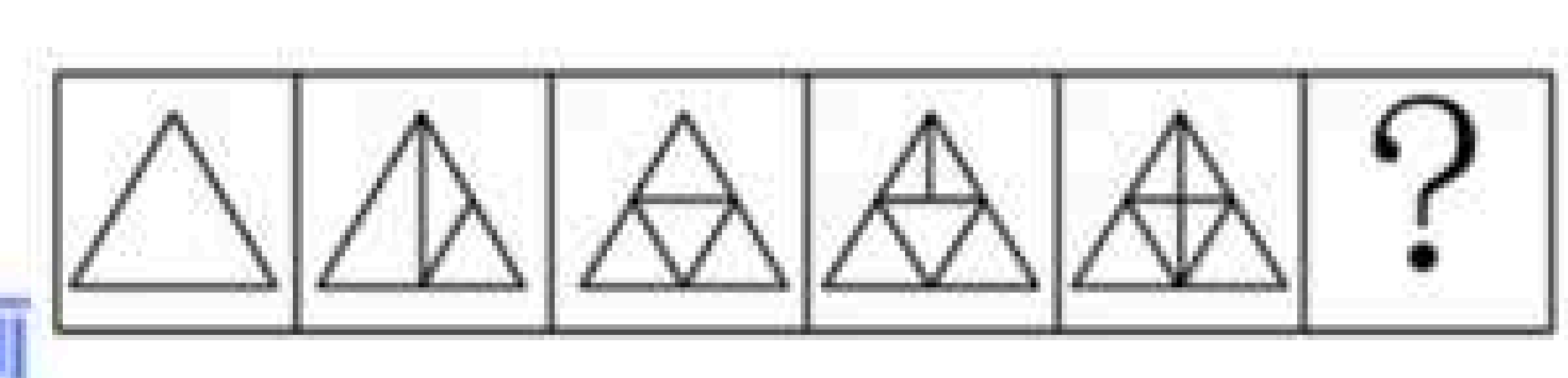
弱特征

只有面特征

①面

②笔画

③点

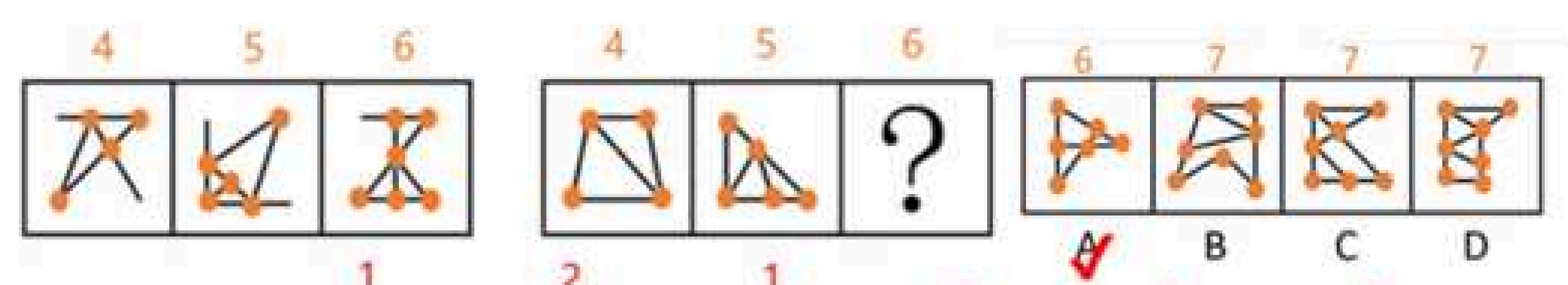
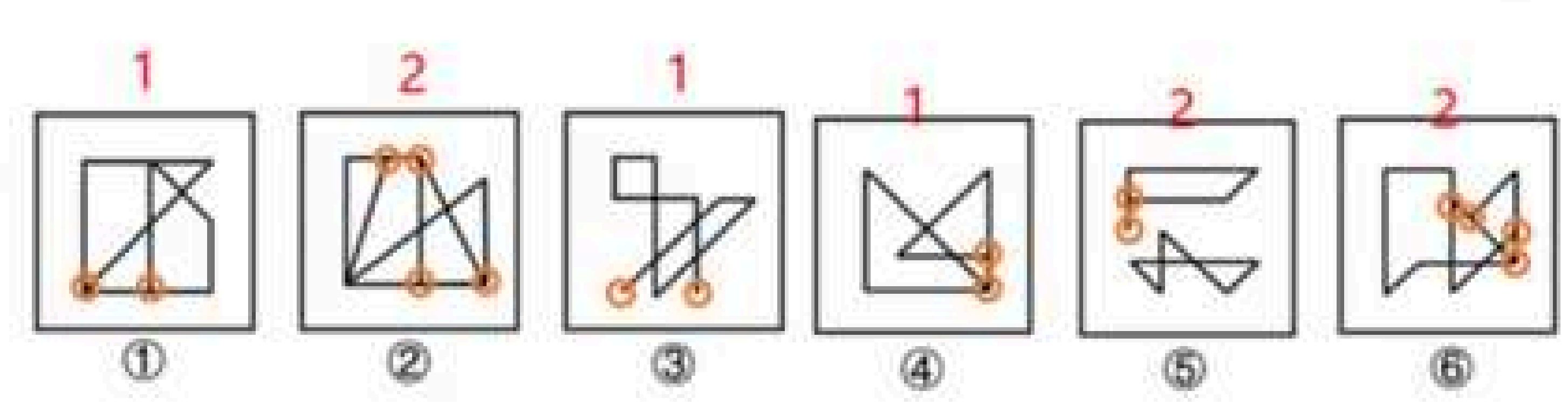


小红书：@贝栗子

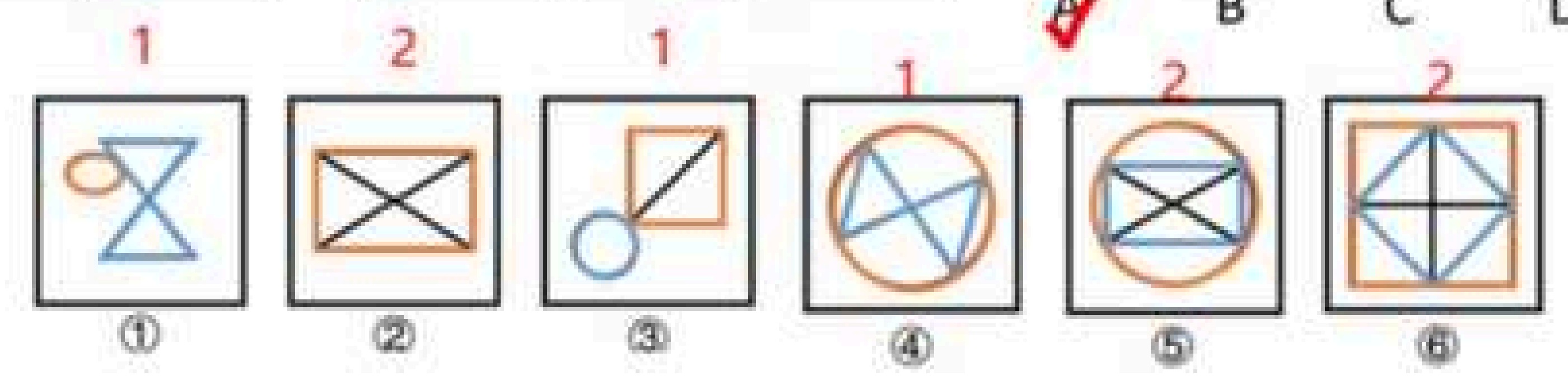
多端点

①笔画

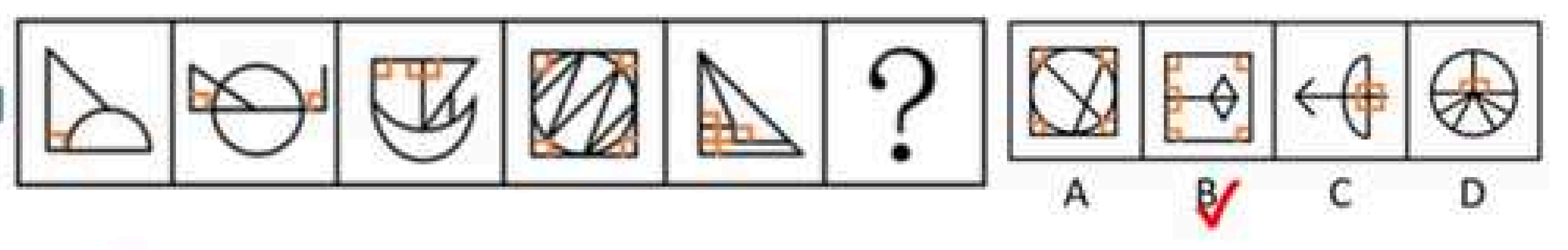
②点



五角星、日、田、圆相交 — 笔画

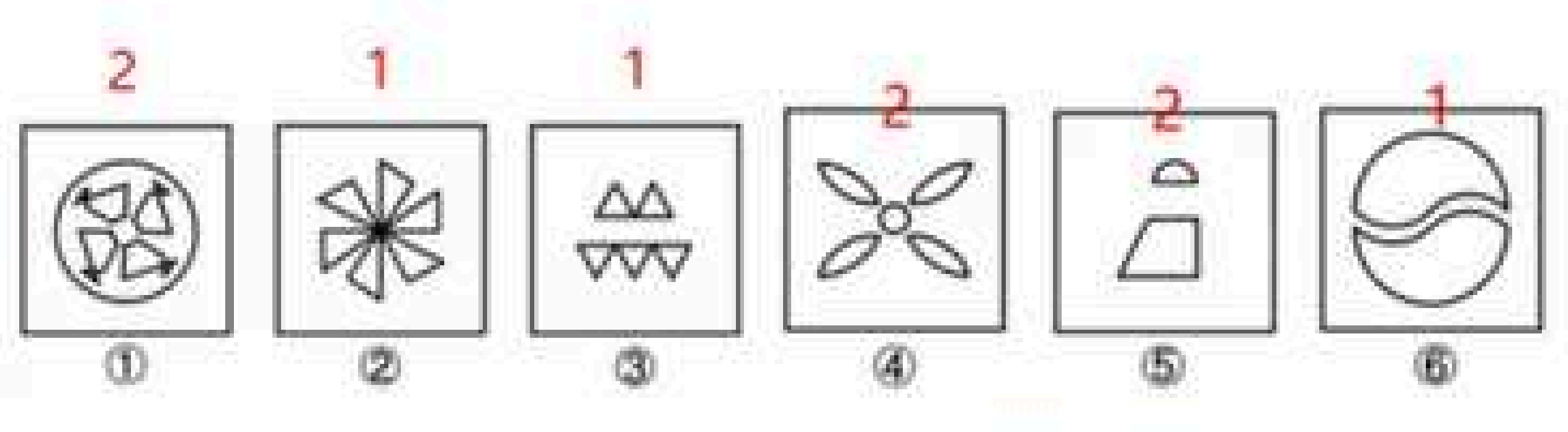


直角三角形、十字架、矩形 (外框) — 直角



强特征

独立 — 元素



元素种类

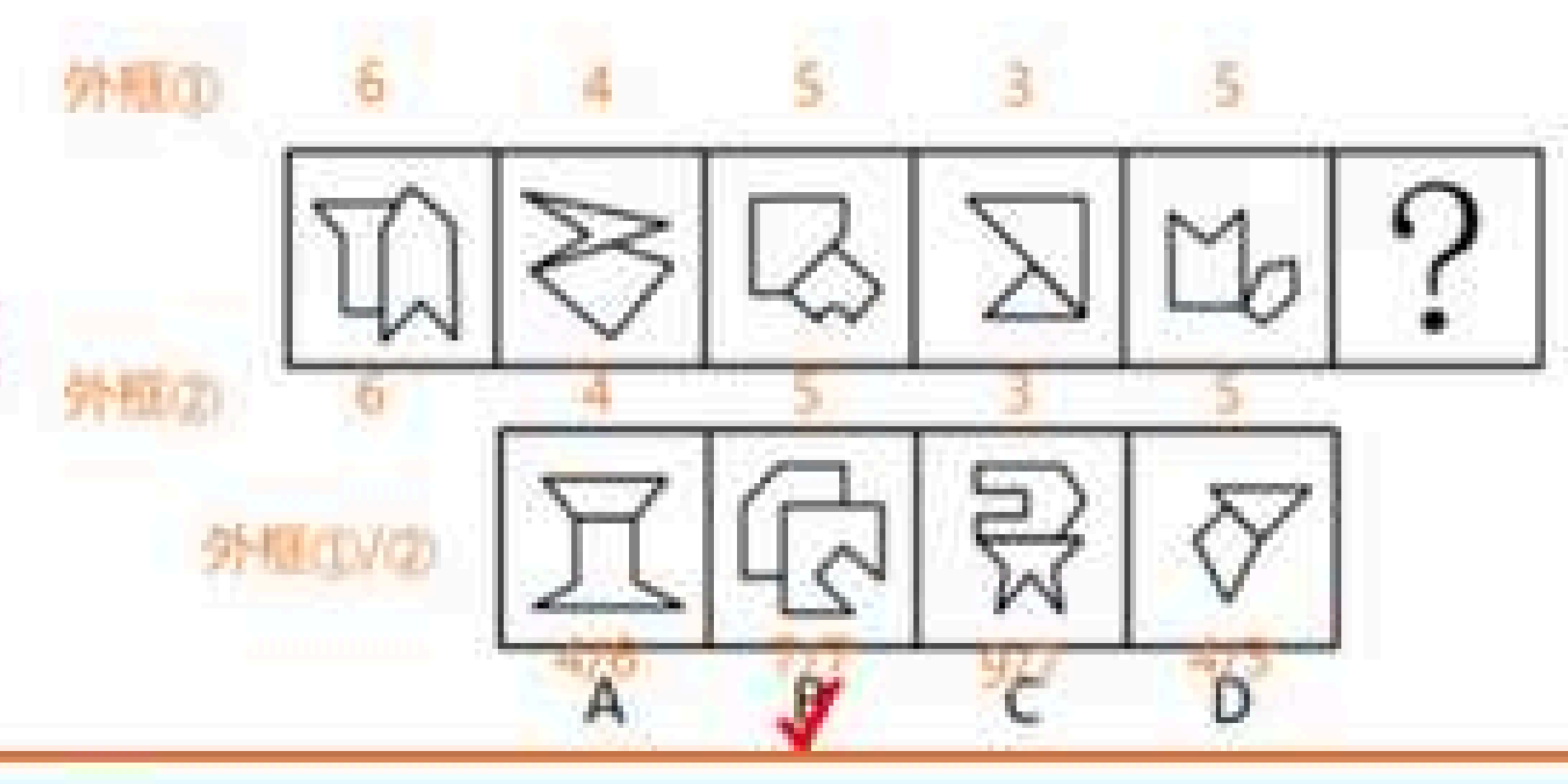
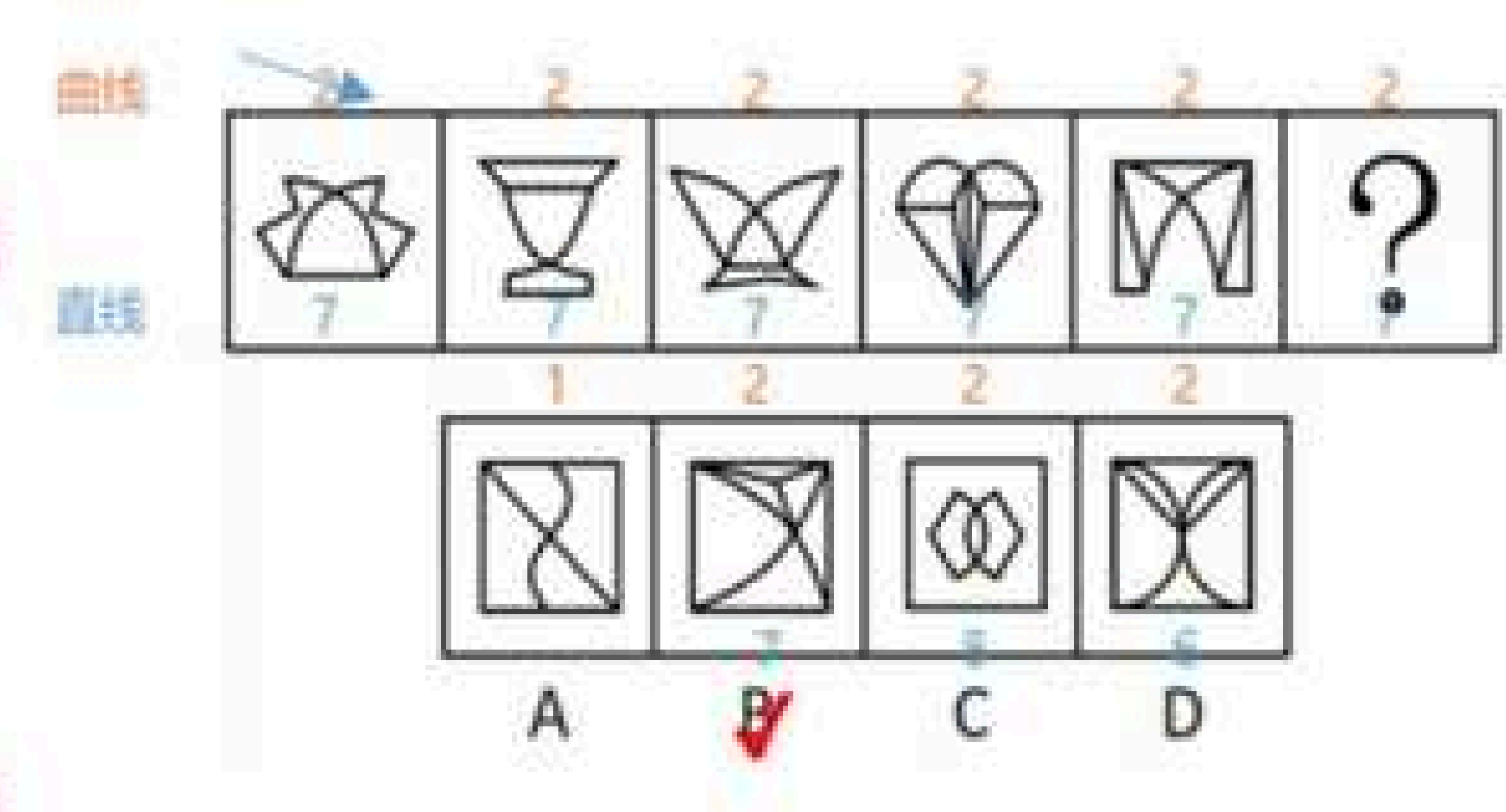
单一线条、都有曲线、多边形

线

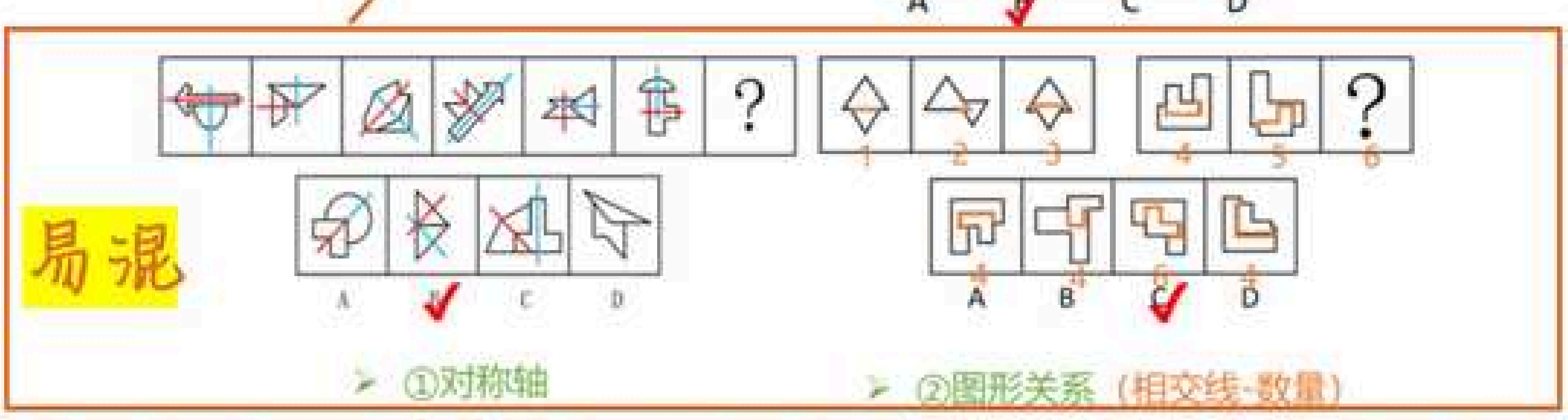
曲线/直线

横线/竖线

外框/外框



2种线运算



易混

①对称轴

②图形关系 (相交线-数量)

没有一样的图案--【2】数量--细化

面细化

所有面

每个面形状一样

形状

123456 三角形

A

B

C

D

都有三角形

三角形

012345

A

B

C

D

只有2种形状的面

运算

三角形

434334

①

②

③

④

⑤

⑥

大小面

明显大面/小面

形状

四边形

343443

A

B

C

D

属性

A

B

C

D

面积

最大面占整体的一半、四分之一等

相同面

有一样的面

A

B

C

D

斜线、相似三角形

平行线

A

B

C

D

首尾

方向, 平行/垂直

A

B

C

D

之间的线条数

A

B

C

D

无小球

数量

直角, 平行线

A

B

C

D

贪吃蛇

内部相同

内外分:

A

B

C

D

有小球

穿过小球个数

A

B

C

D

线条穿过小球16个, 没穿过9个

A

B

C

D

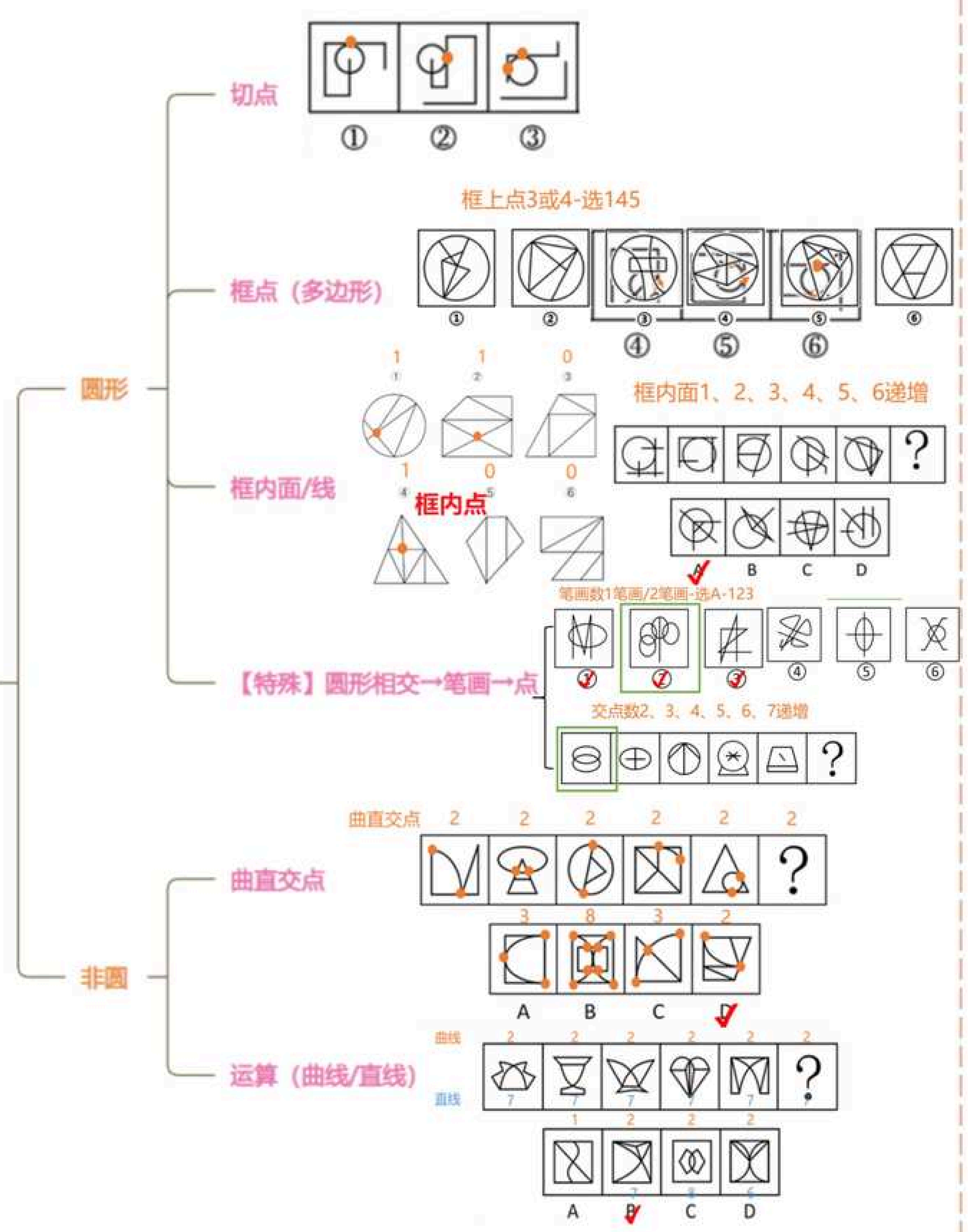
小红书@贝栗子

第80/92页

没有一样的图案--【2】数量--细化



点细化 都有曲线
小红书：@贝栗子



没有一样的图案--【2】数量--细化

元素细化

=2种元素

先运算

后换算

换算公式：图1+图3=两倍图2

>2种元素

找相同

无相同

元素运算

正方形
圆形

4
5

1
0

2
1

①

②

③

④

⑤

⑥

2
3

3
4

3
2

1
2
3
4
5
6

6
7
5
7

A
B
C
D

↖ + ↗ = 2 × ↘

↗ = 2 × ↖

将1个的图案回代题干

相同元素的位置关系

位置

比例

对比选项-方向

数字代表重量

开闭性-全封闭图形4或5个

属性

自己

邻居

①

②

③

④

⑤

⑥

①

②

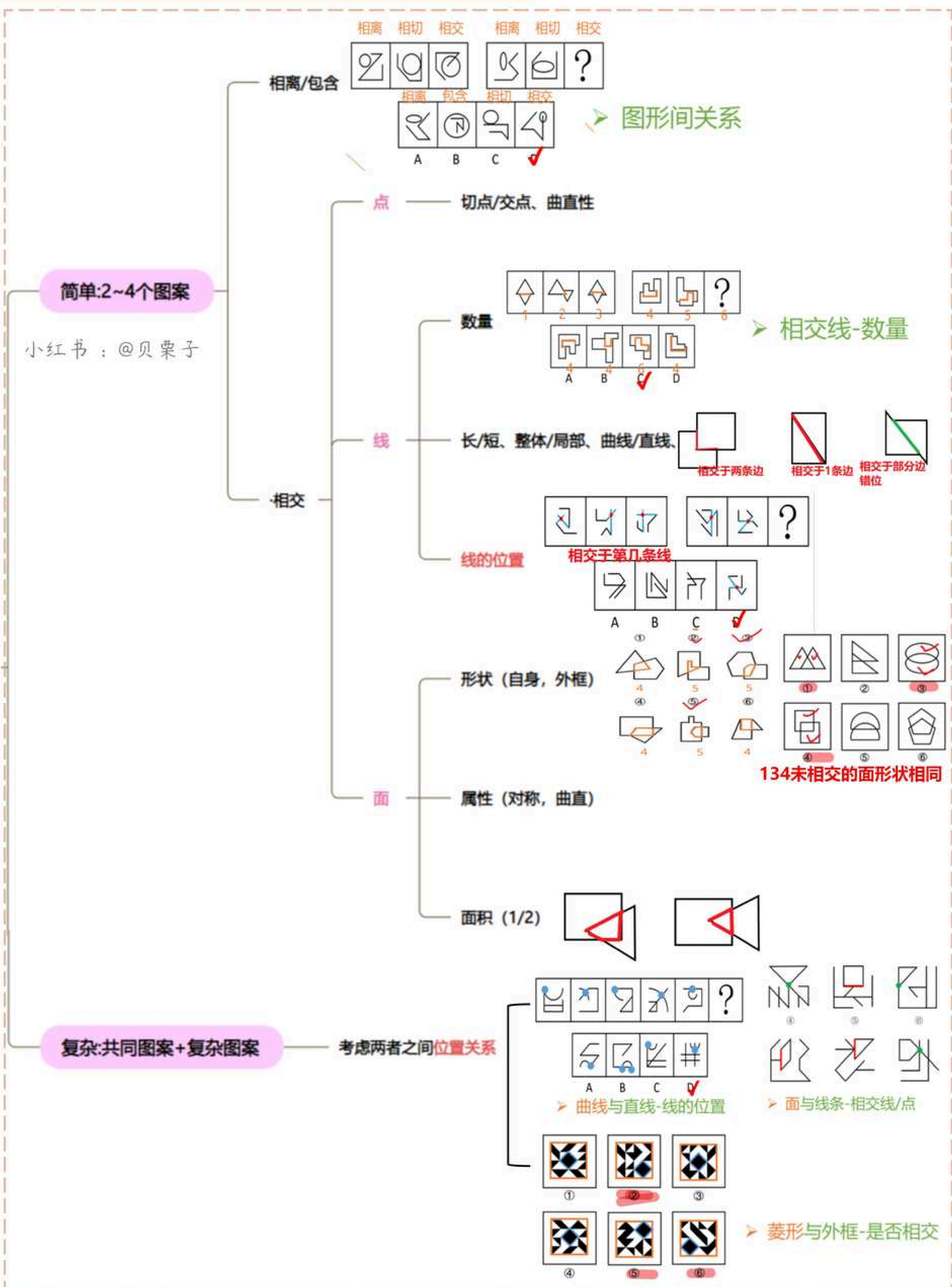
③

④

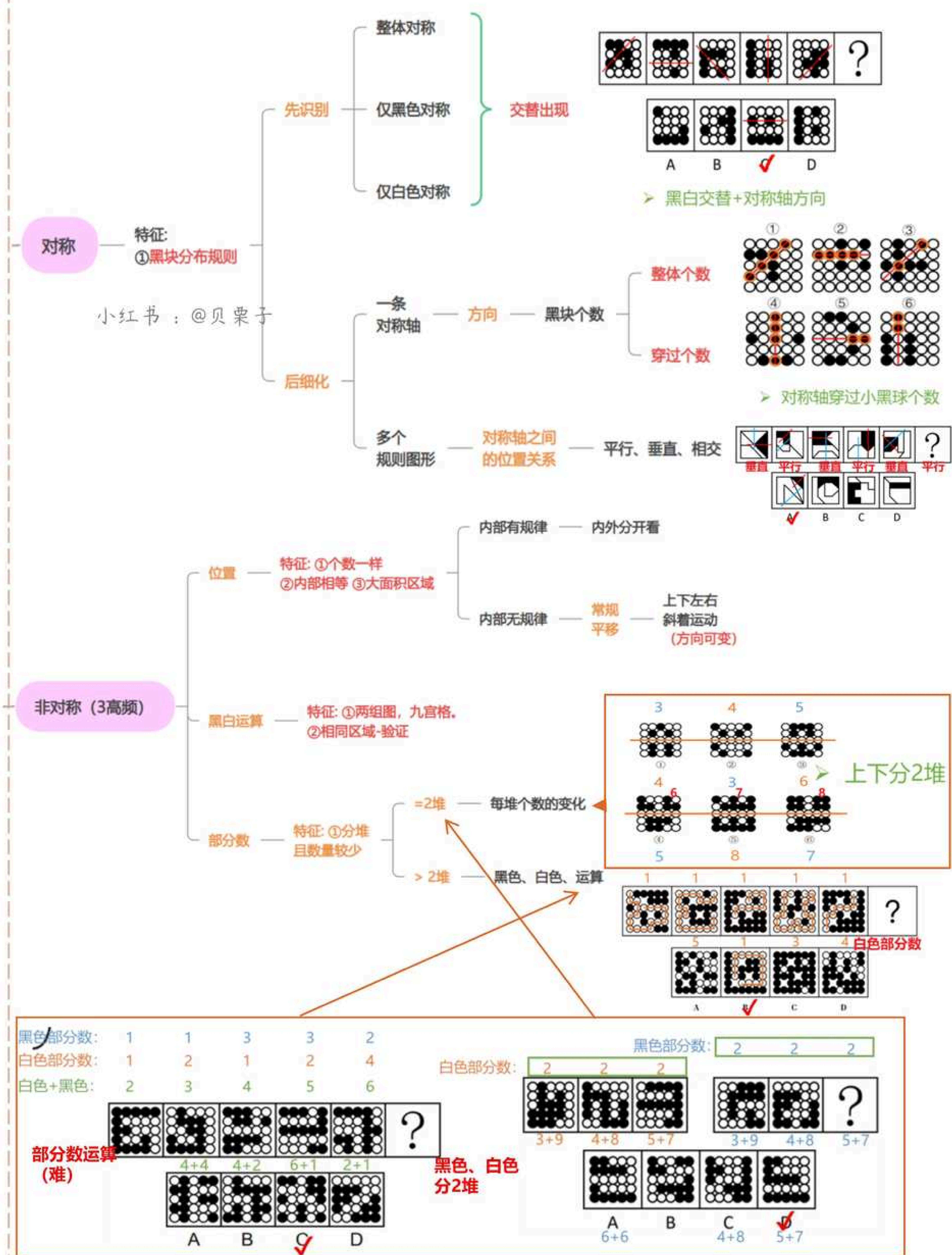
⑤

⑥

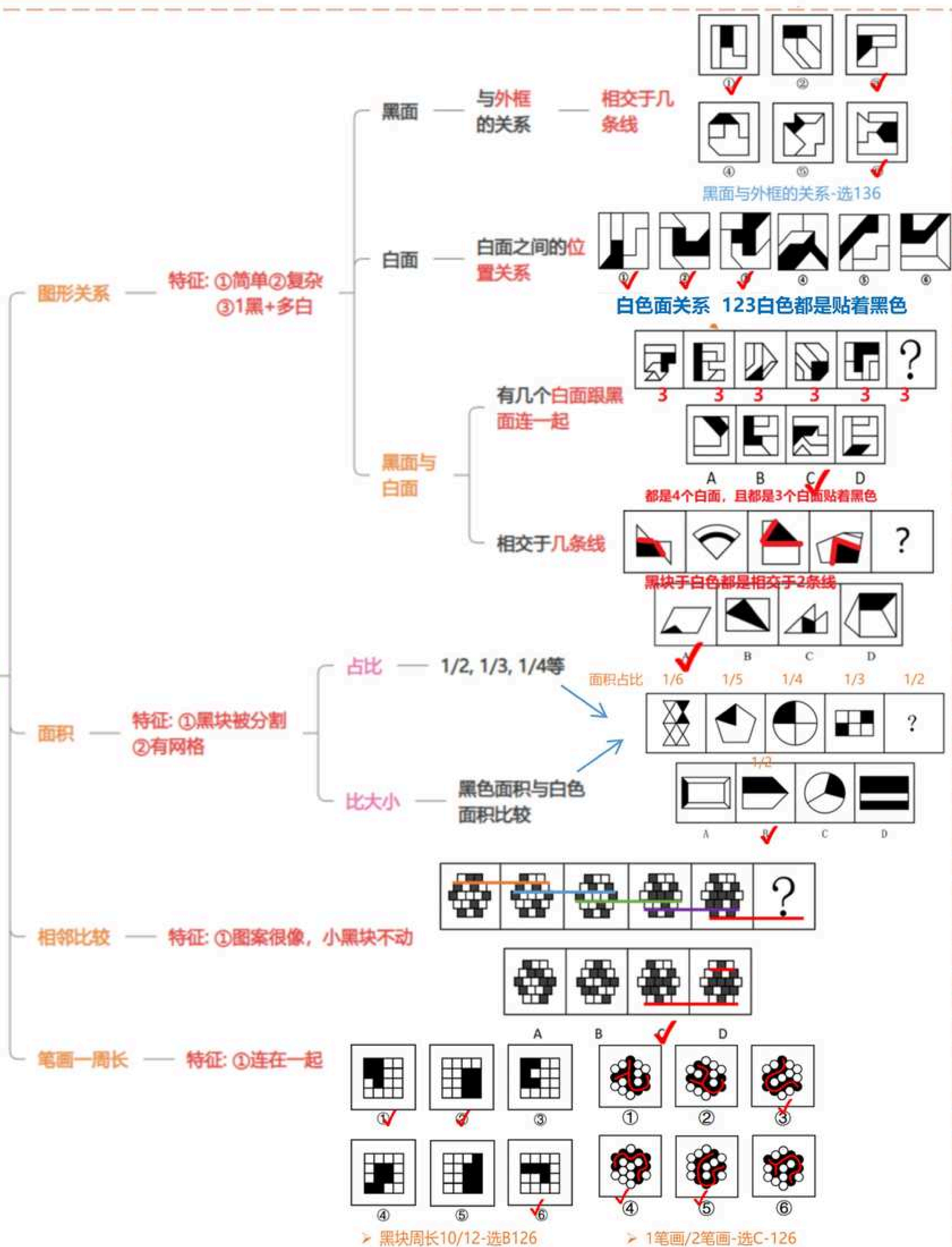
没有一样的图案--【3】图形间位置



图推-黑白块--对称,非对称



图推-黑白块--明显





第十节:立体空间-不规则、平面拼合、折纸.(选修)

1.不规则: 广东、山东、联考、浙江、四川、上海, 各地事业, 目前需要关注。

2.平面拼合: 广东、江苏、联考、四川, 各地事业, 目前需要关注。

3.平面拼合-黑白面: 江苏, 目前需要关注。

4.俄罗斯方块: 广东、江苏, 目前需要关注。

5.折叠: 广东、四川, 目前需要关注。新考点, 建议其他省份均关注。

备注: 未上榜省份建议娱乐心态, 为这些省份的同学加油! 同时, 考情是有可能发生变化的, 有能力可以了解一下, 但不需要重点准备。

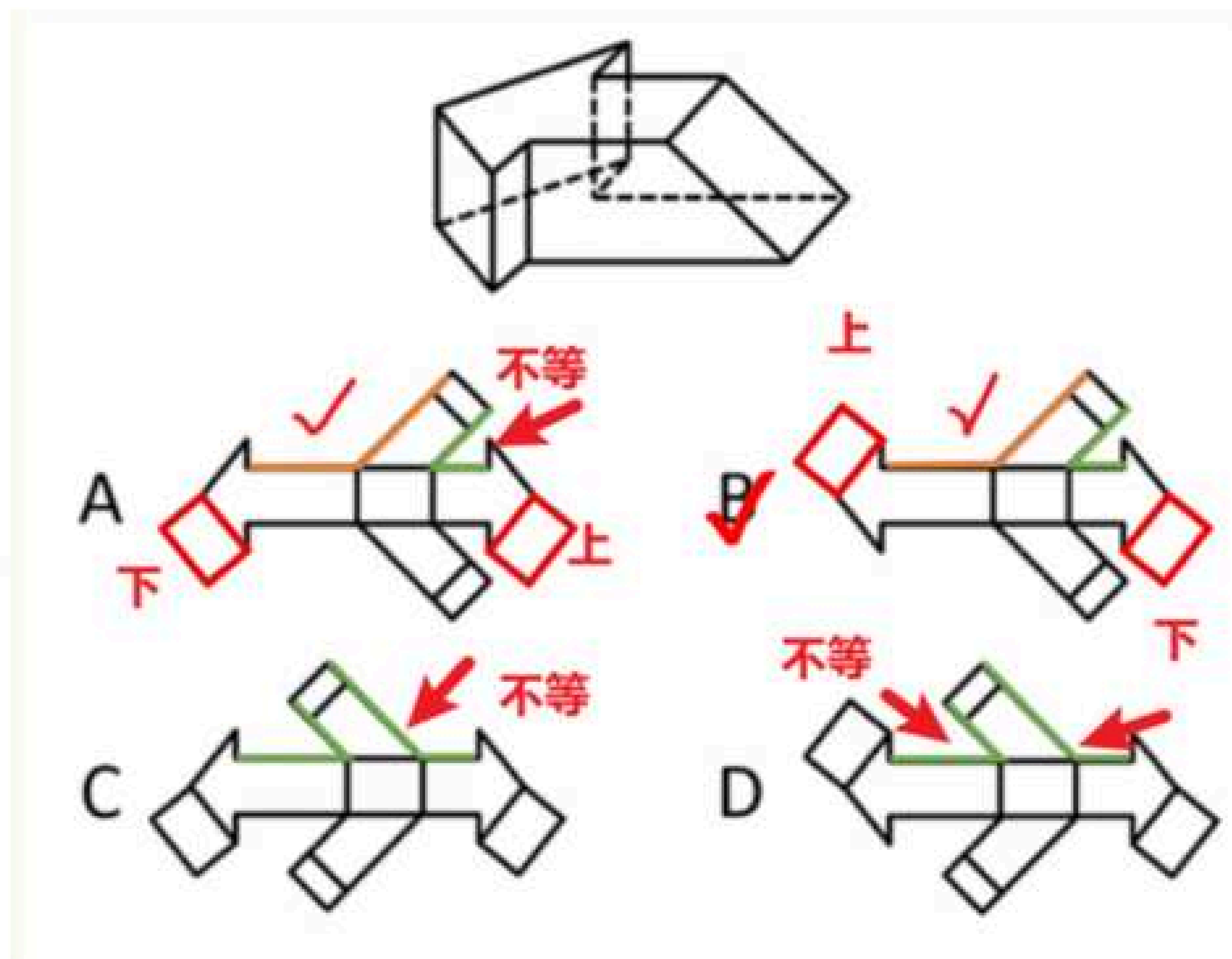
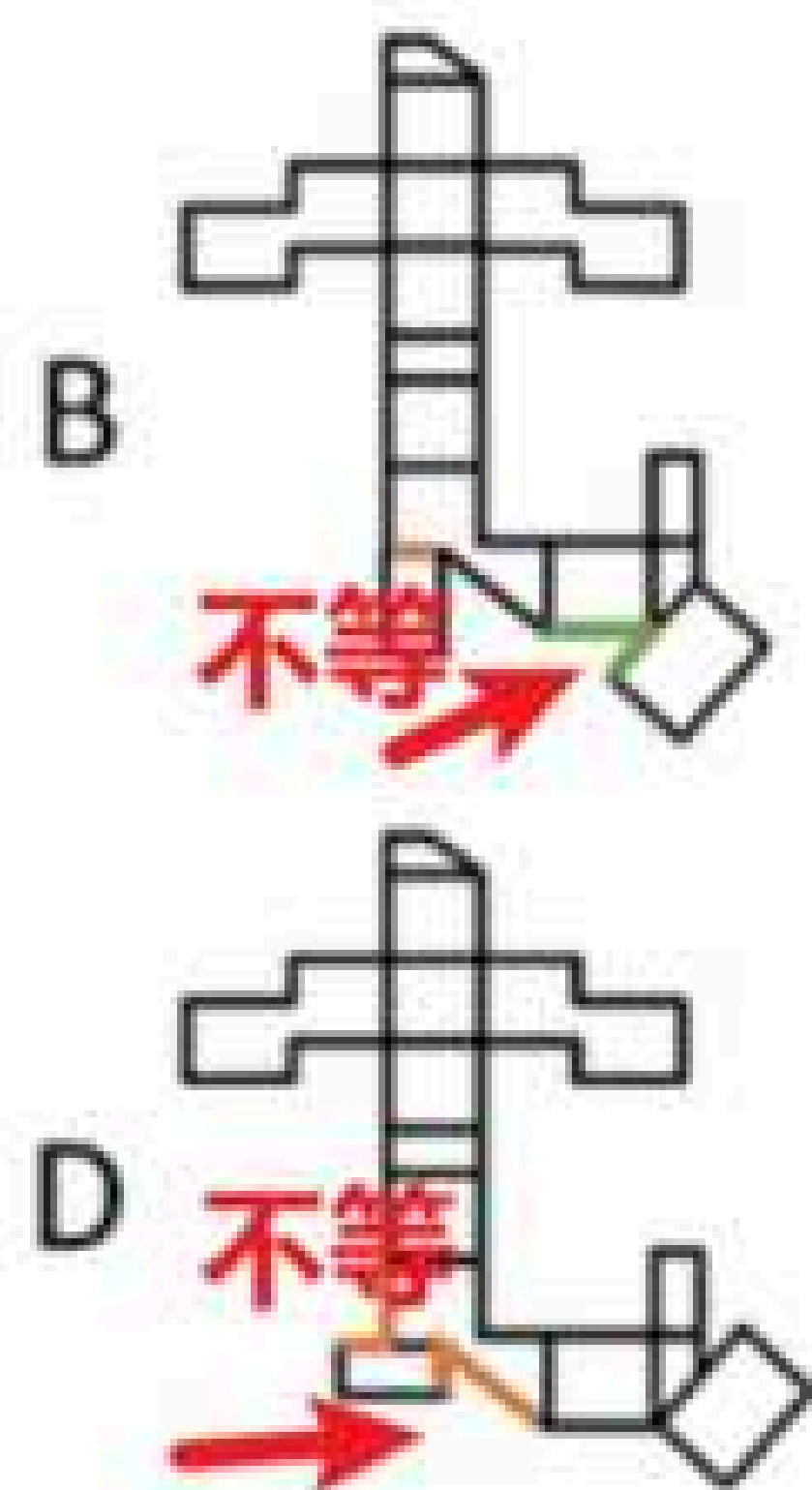
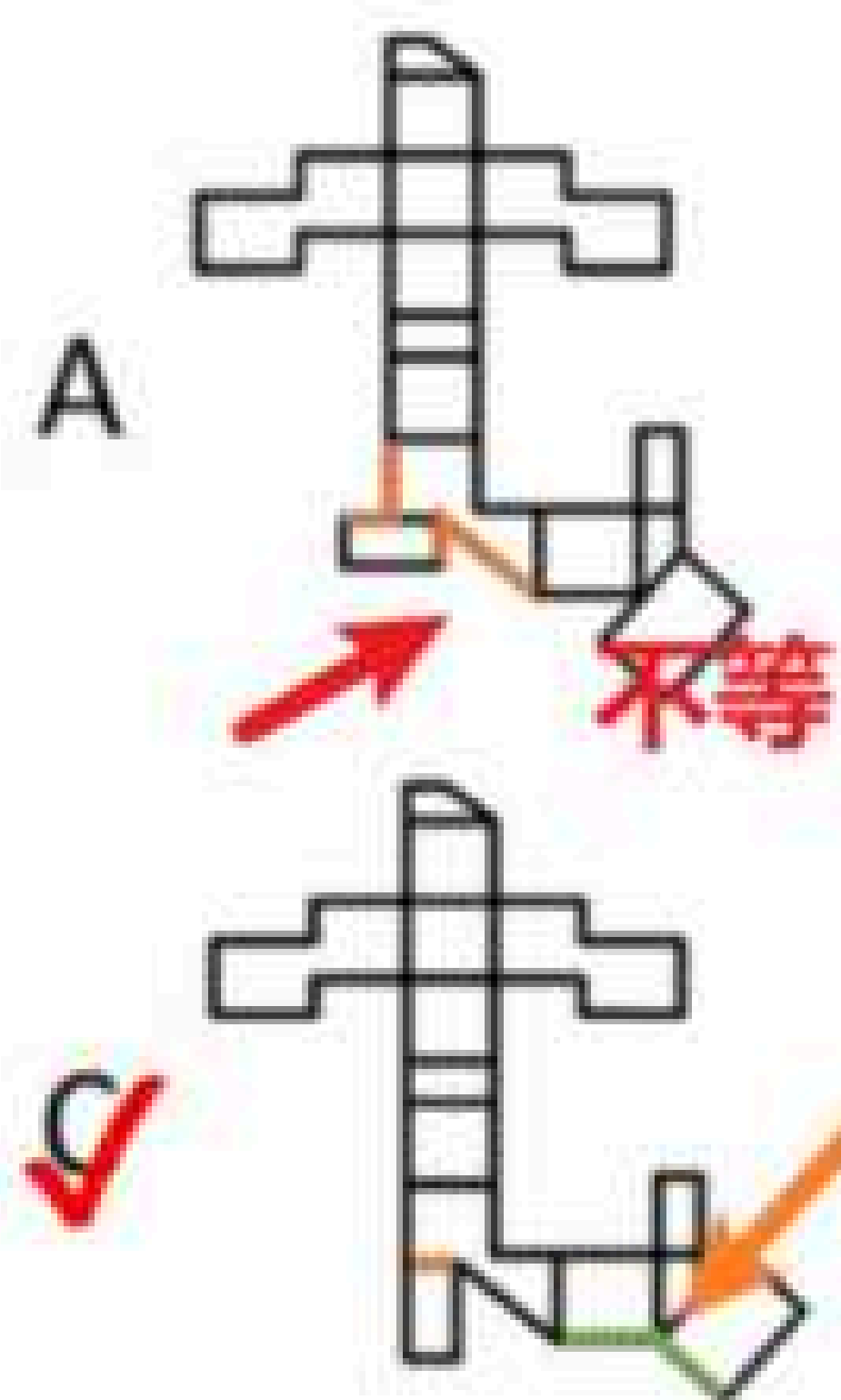
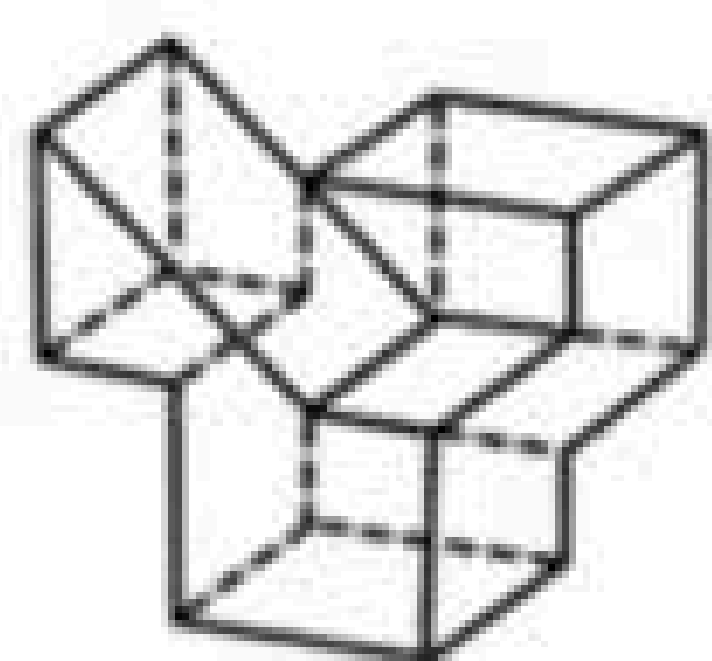
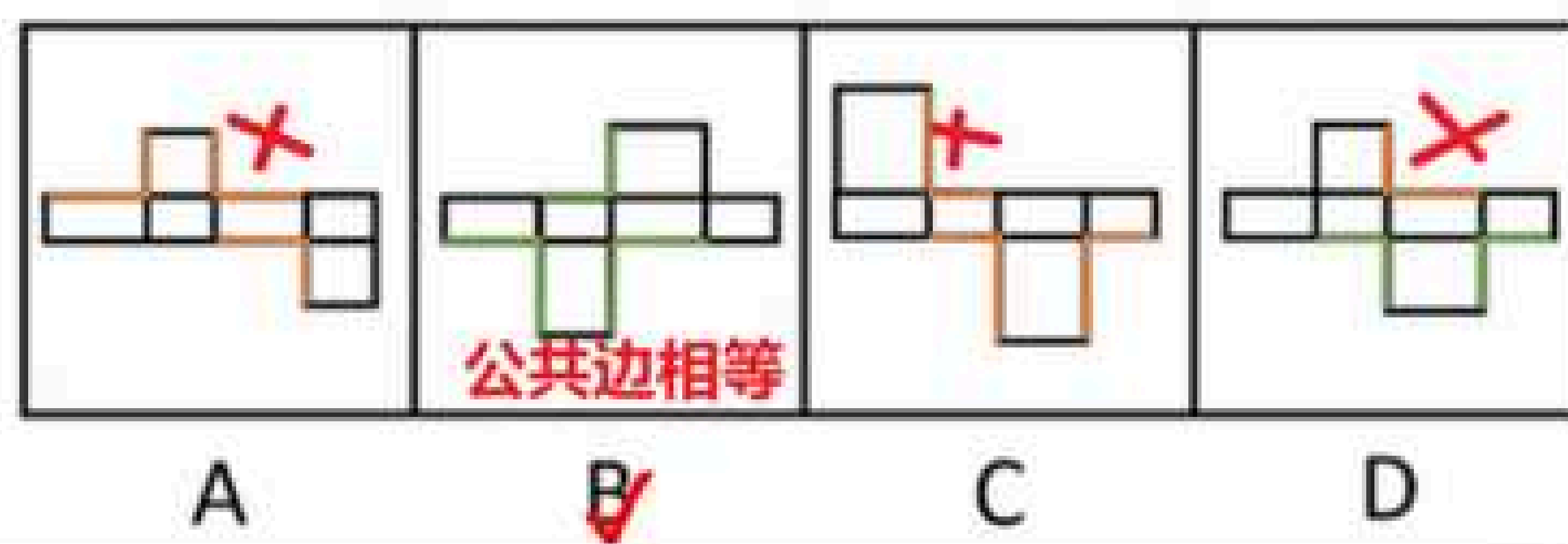
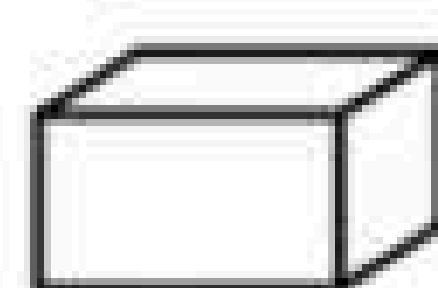
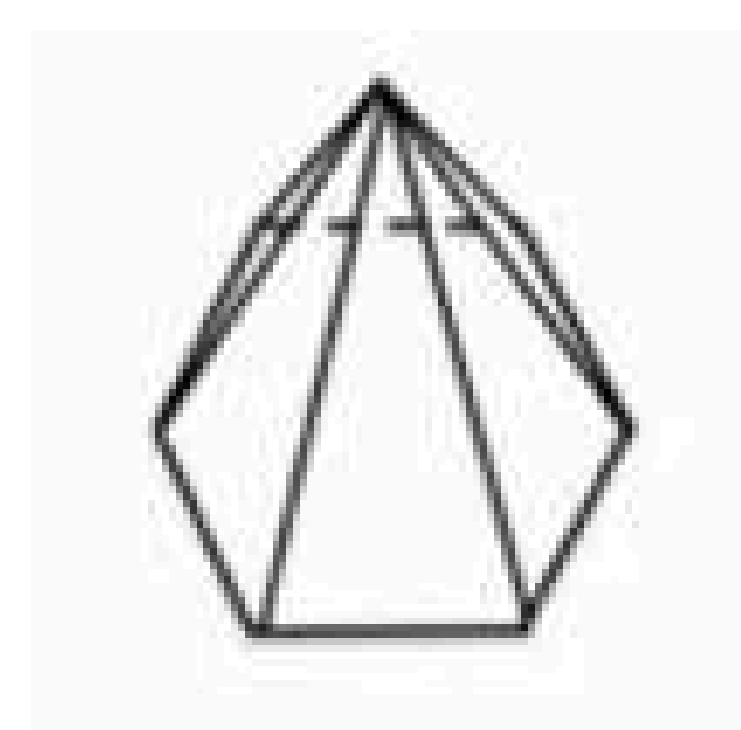
1.不规则



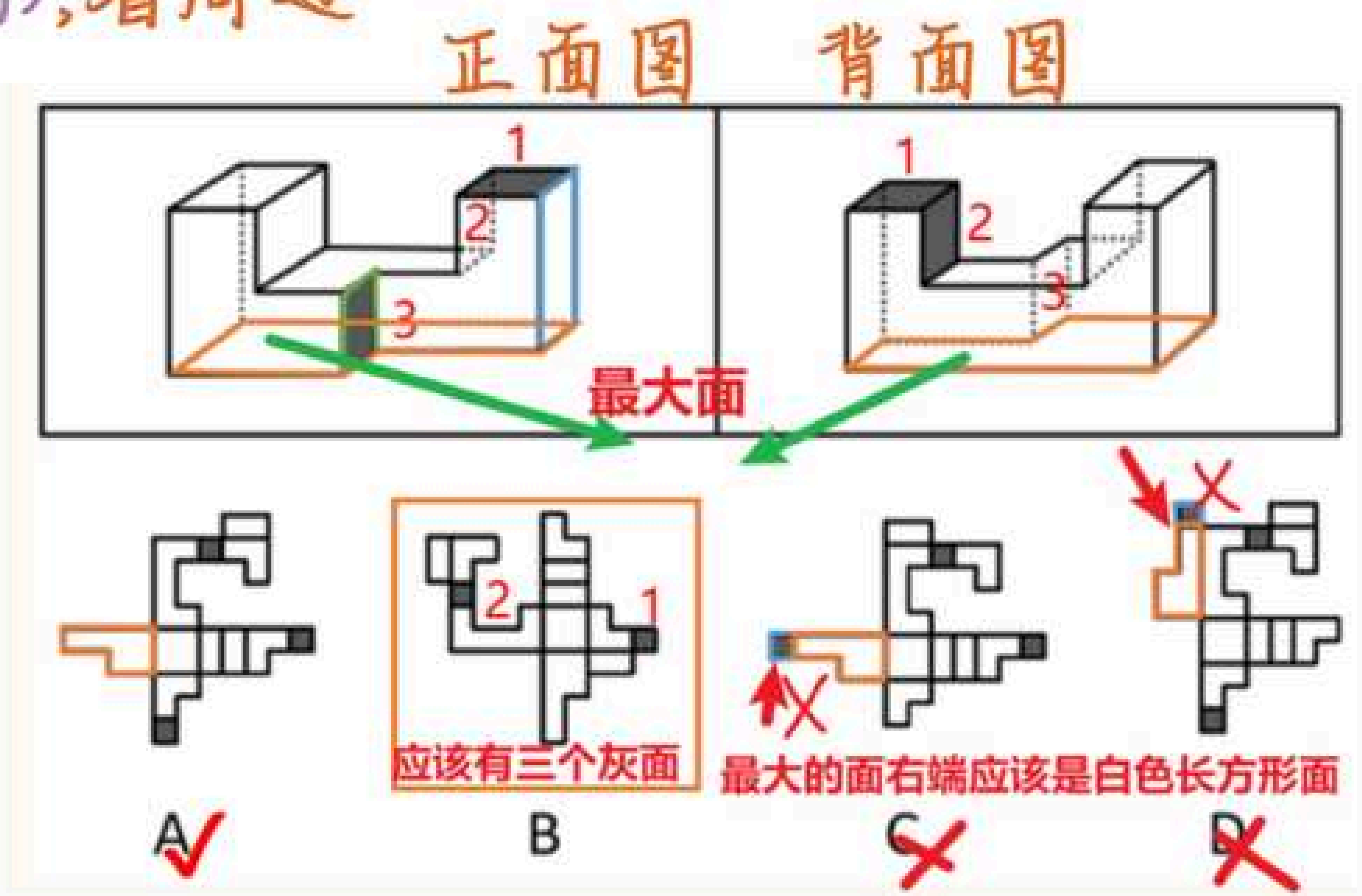
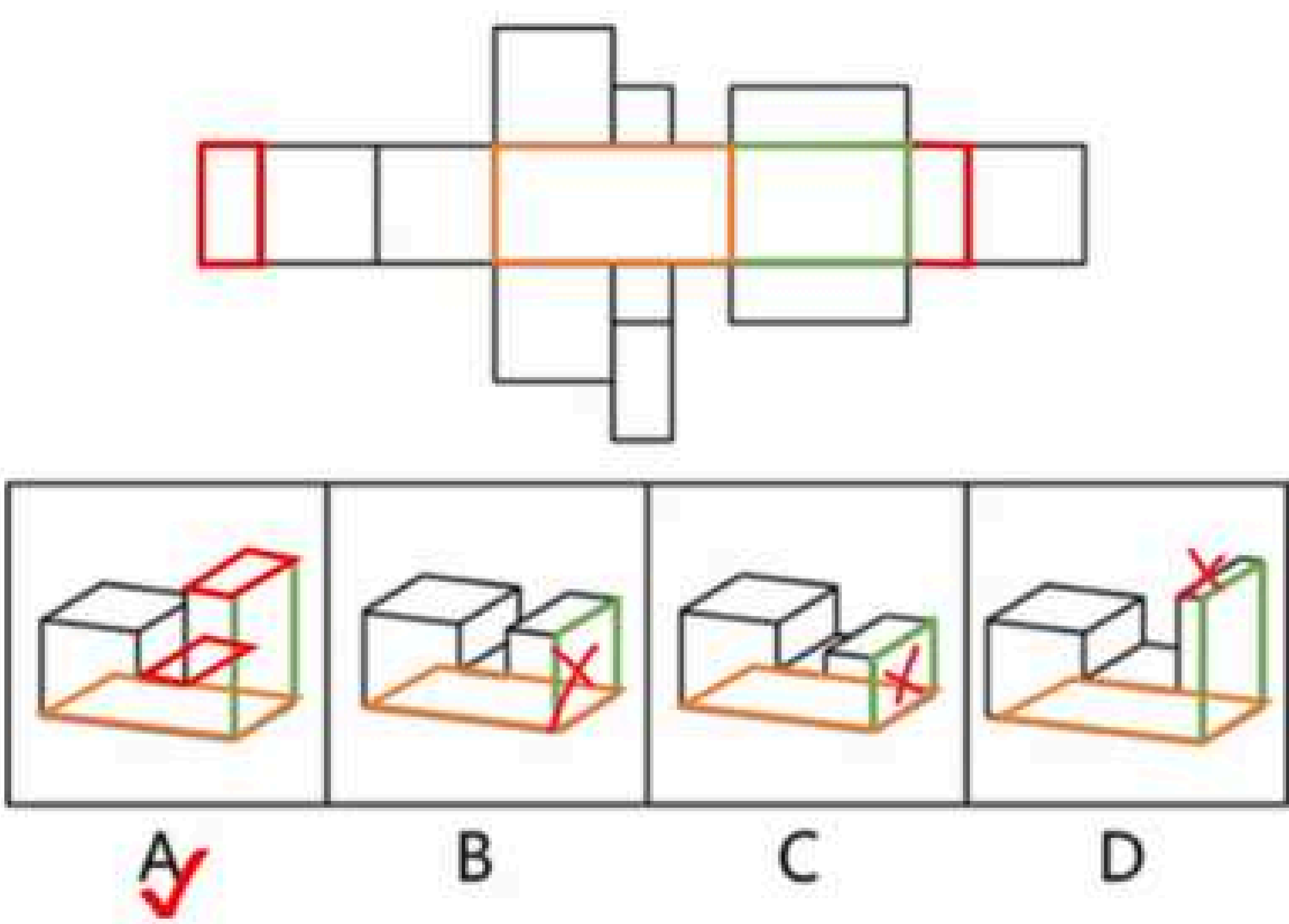
来源于小红书@贝栗子

小技巧

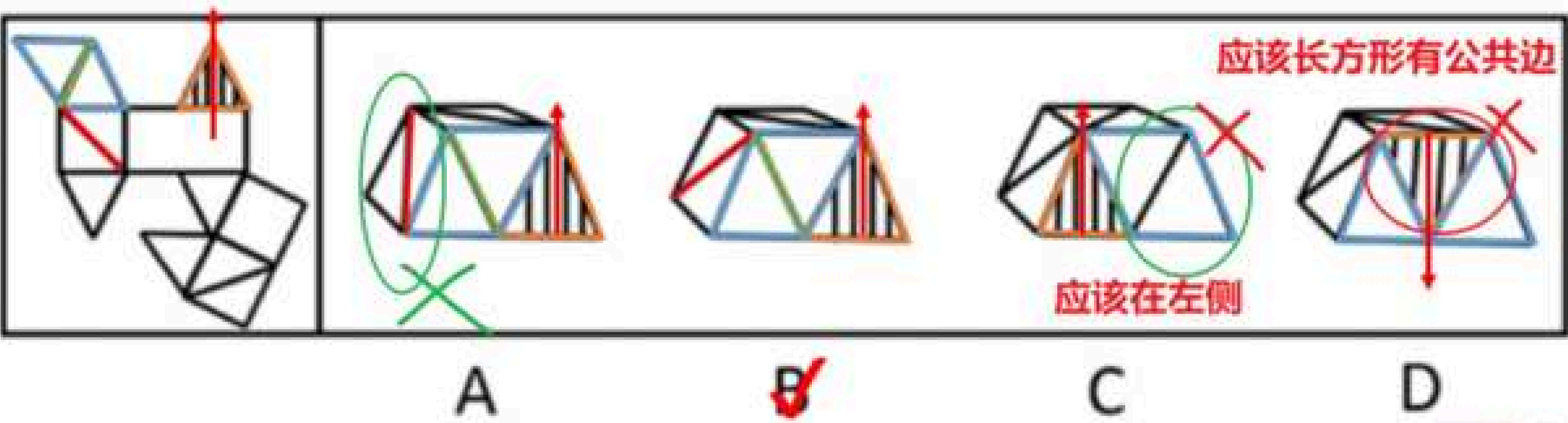
①选项找差异, 公共边做排除 (公共边长度相等)



② 题干找特殊(最大的, 标记物), 看周边



小红书：@贝栗子



2.平面拼合

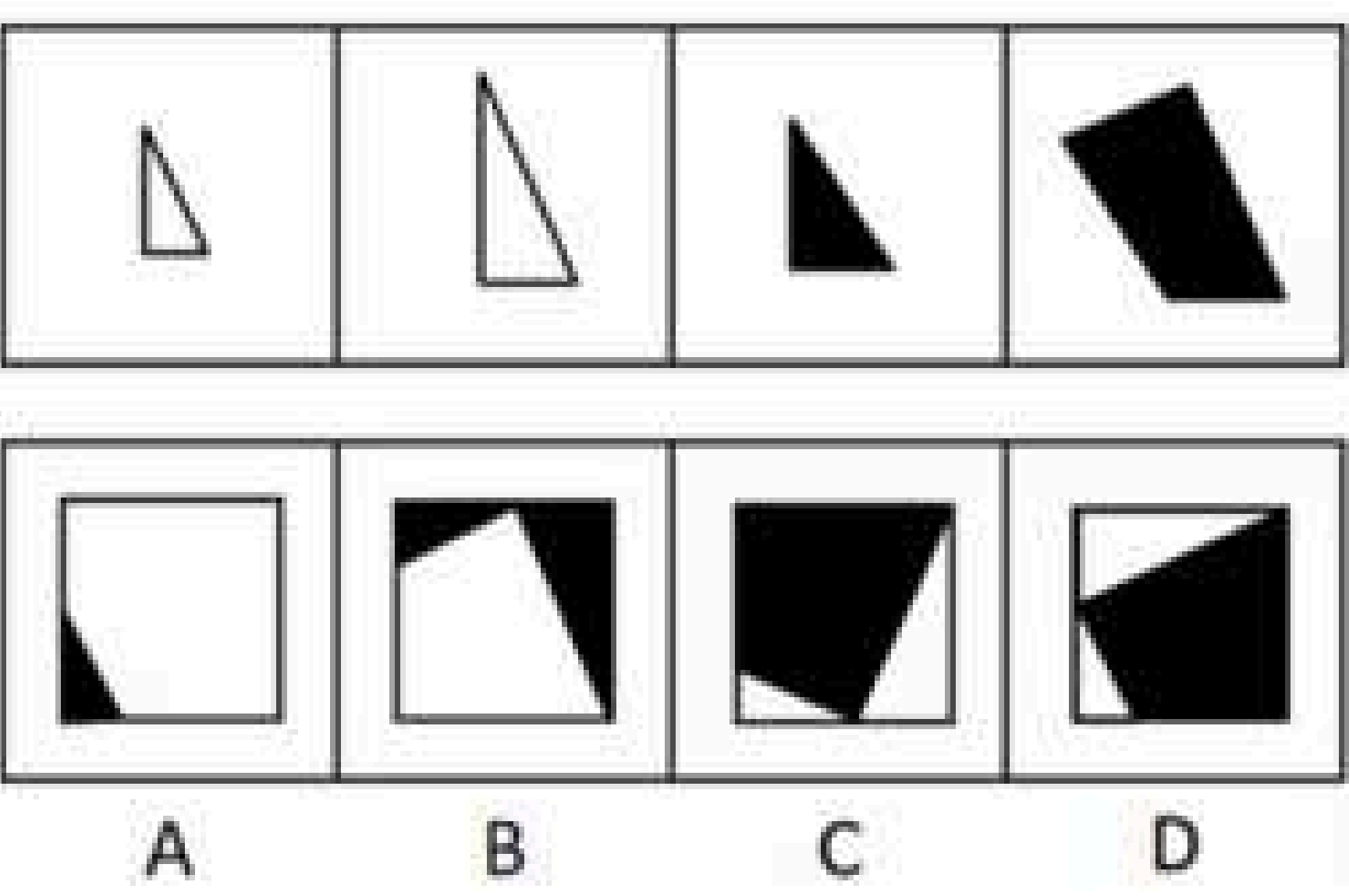
只有白色面--基本原理

出题者怎么画“平面拼合”？画一个图之后，先复制粘贴，后切割

- 基本原则：图形只能通过上、下、左、右平移，不能旋转、翻转（多数考试）
- 解密：① 特殊线条（唯一的长线或横竖线）② 等长的线 ③ 拆分选项

黑色白色面--基本原理

出题者怎么出“平面拼合-黑白面”？四张纸片，每张纸片一面是黑色，另一面是白色



- 基本原则：可以平移、旋转、翻转（多数考试）
- 解密：旋转 → 颜色一致，翻转 → 颜色变化（本质就是区分旋转，翻转）

条件: 图形只能通过上、下、左、右平移, 不能旋转、翻转

- 方法 {
- ① 特殊线条(唯一的长线或横竖线)
 - ② 等长的线
 - ③ 拆分选项

只有白色

Left side examples:

- Row 1: Four boxes with different shapes. Option B is marked correct.
- Row 2: Four boxes with different shapes. Option B is marked correct.
- Row 3: Four boxes with different shapes. Option B is marked correct.

Right side examples:

- Row 1: Four boxes with different shapes. Option B is marked correct.
- Row 2: Four boxes with different shapes. Option C is marked correct.
- Row 3: Four boxes with different shapes. Option C is marked correct.

Bottom section:

Left: A target shape made of colored lines.

Options: Five boxes with different shapes. Option B is marked correct.

Text: 左边给定的图形是由右边哪些图形拼合(只可平移, 不可旋转和翻转)而成的?

Text: 关注长度问题

条件: 可以平移、旋转、翻转(多数考试)

- 方法: 时针法 {
- 旋转 → 颜色一致
 - 翻转 → 颜色变化

哪项不能由其拼合而成?

哪项不能由其拼合而成?

黑白都有

Left side examples:

- Row 1: Four boxes with different shapes. Option B is marked correct.
- Row 2: Four boxes with different shapes. Option B is marked correct.

Right side examples:

- Row 1: Four boxes with different shapes. Option B is marked correct.
- Row 2: Four boxes with different shapes. Option B is marked correct.

Bottom section:

Left: A target shape made of colored lines.

Options: Five boxes with different shapes. Option B is marked correct.

Text: 考场思维: 看其他选项优先

Text: BC的图23结构一样, CD不一样 → BC同构, 只能选D

3. 俄罗斯方块

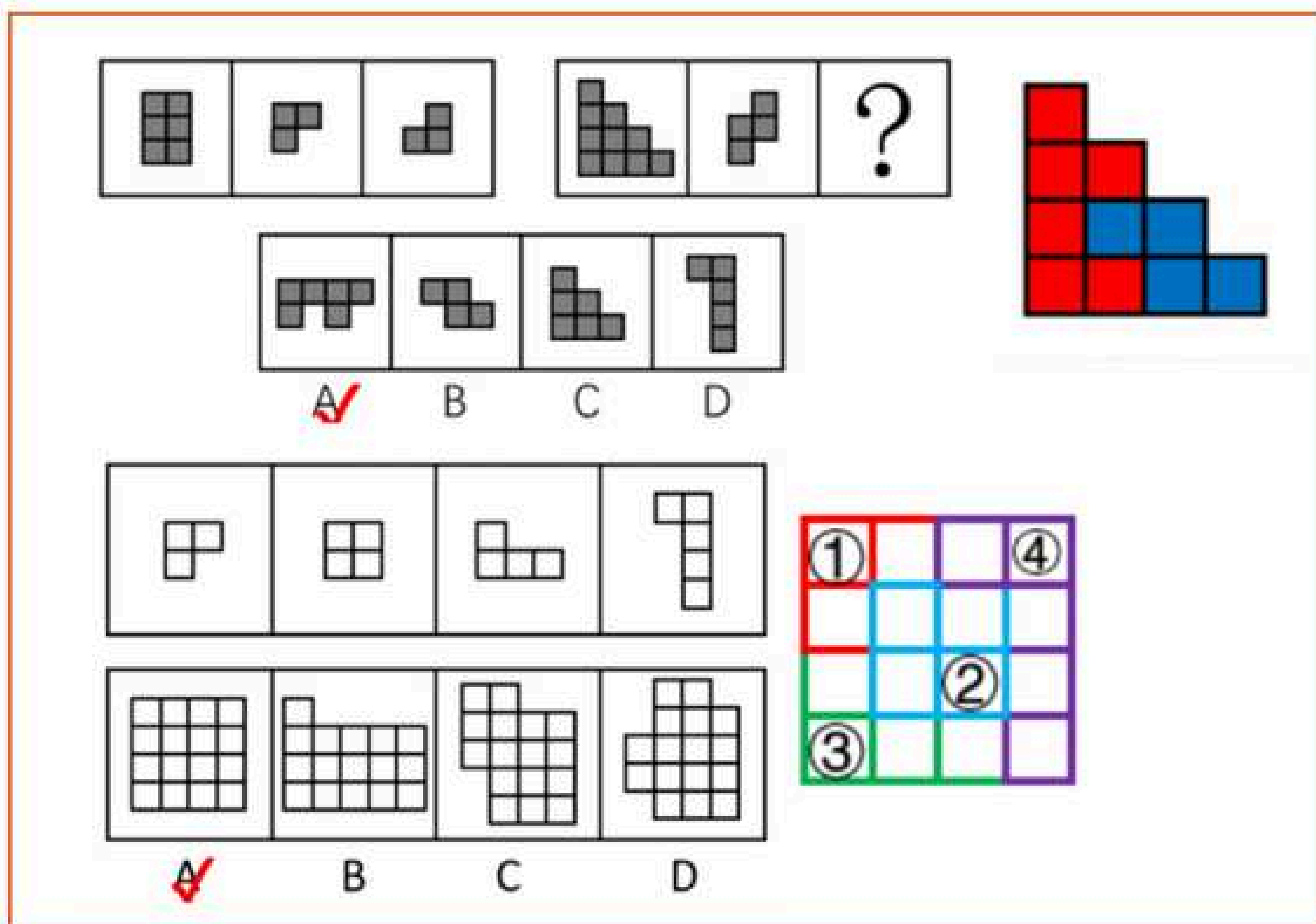
小红书：@贝栗子

出题形式一：拼接成选项

① 优先代入大的

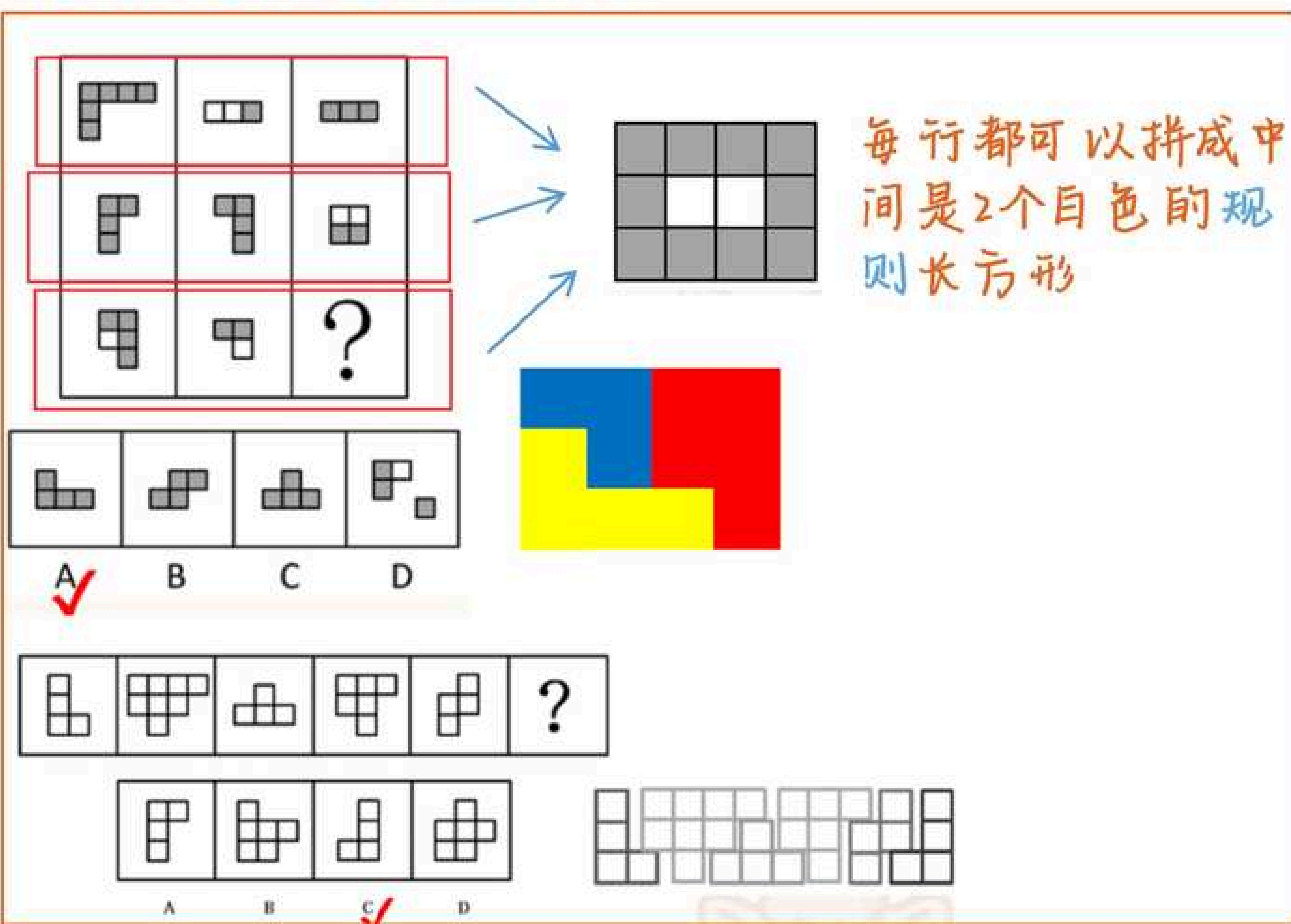
② 贴边拼

考场思路：优先不旋转（简单）



出题形式二：拼接成“规则图案”（没有提示）

方法：优先考虑“规则图案”

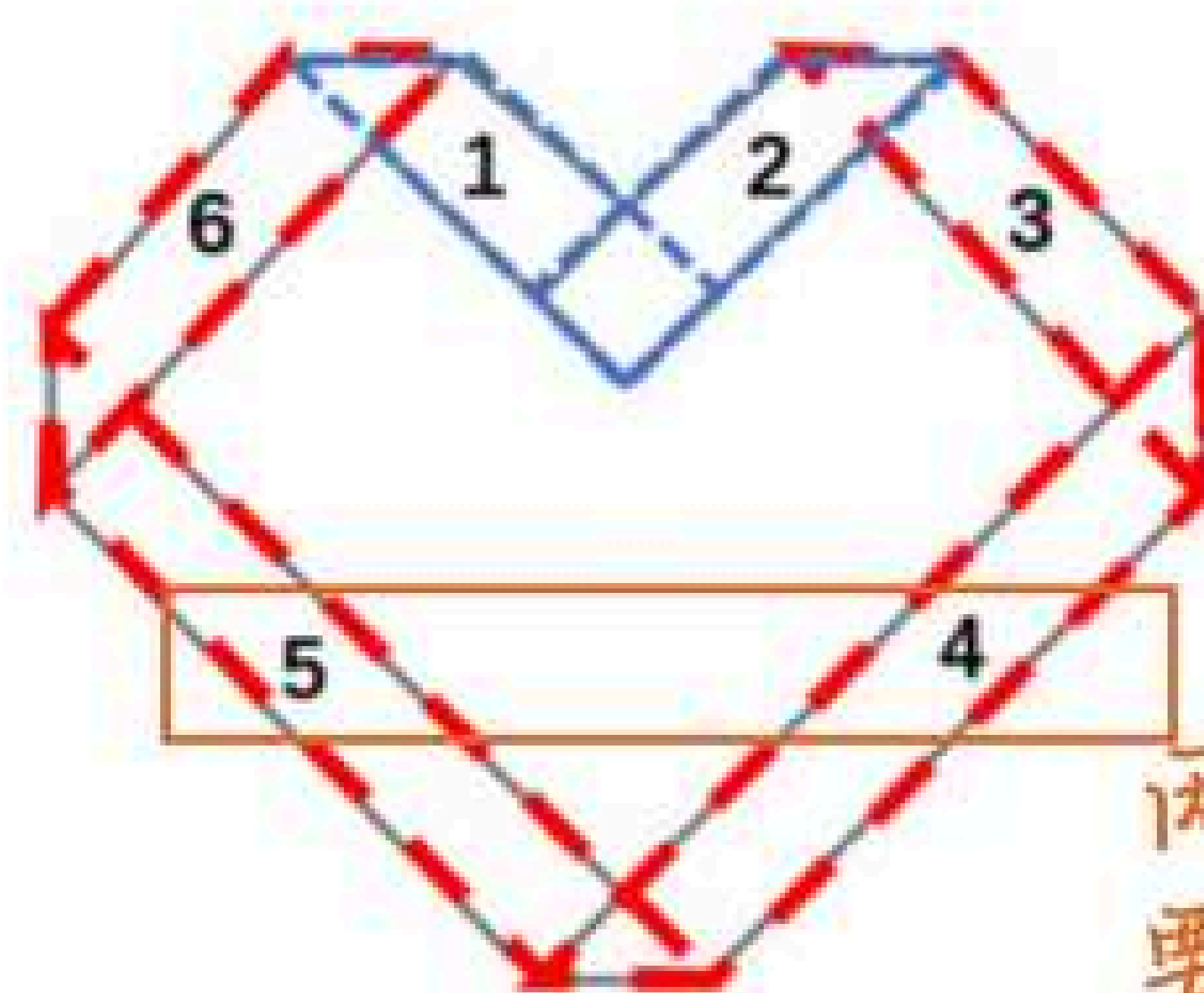
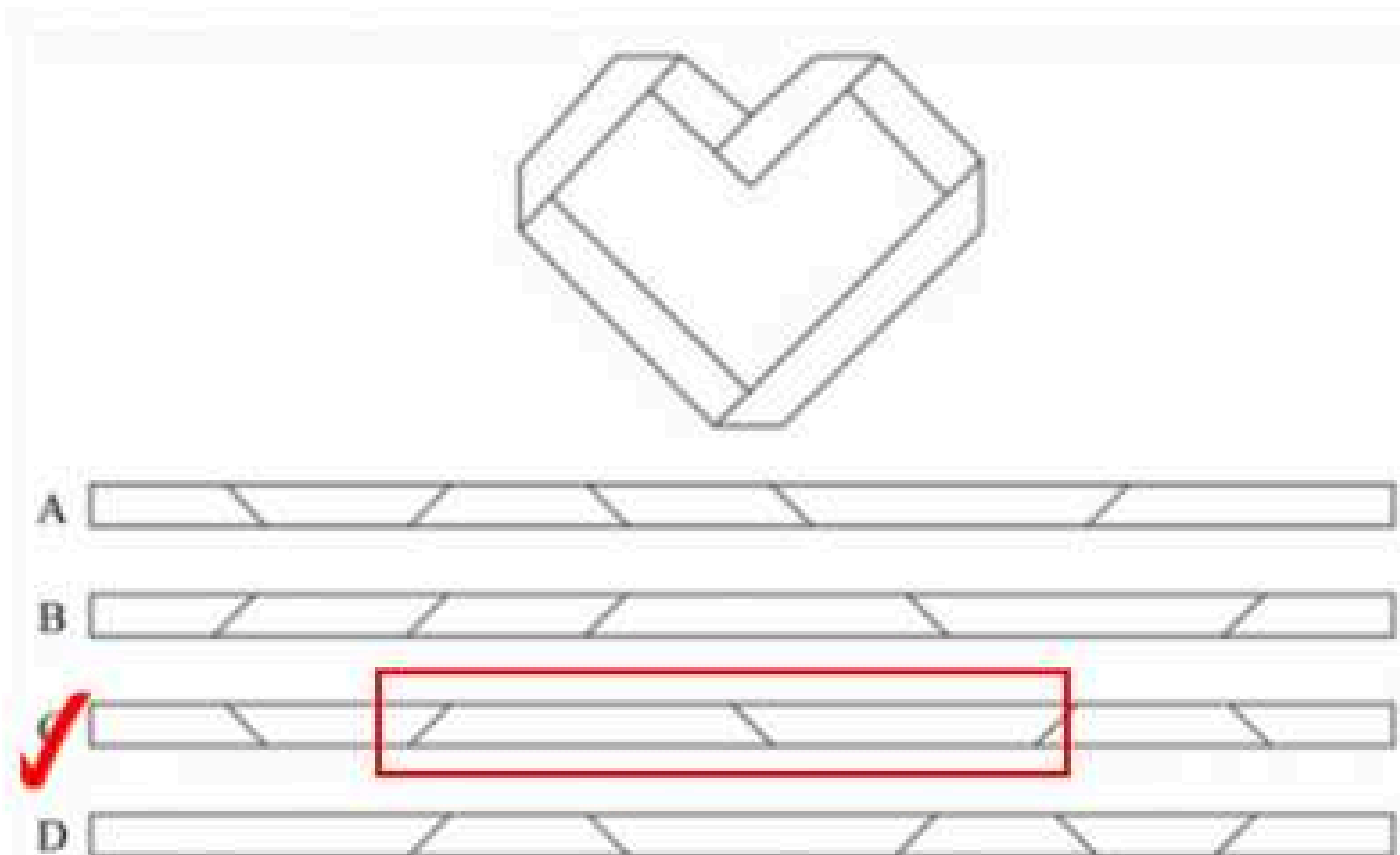
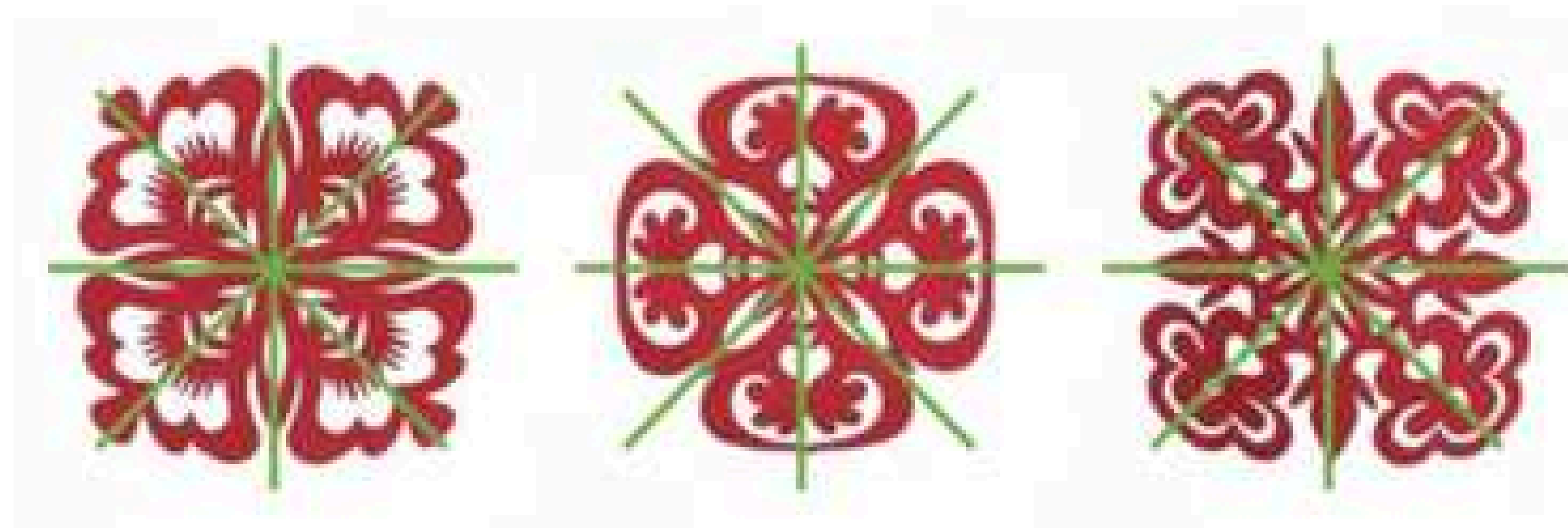
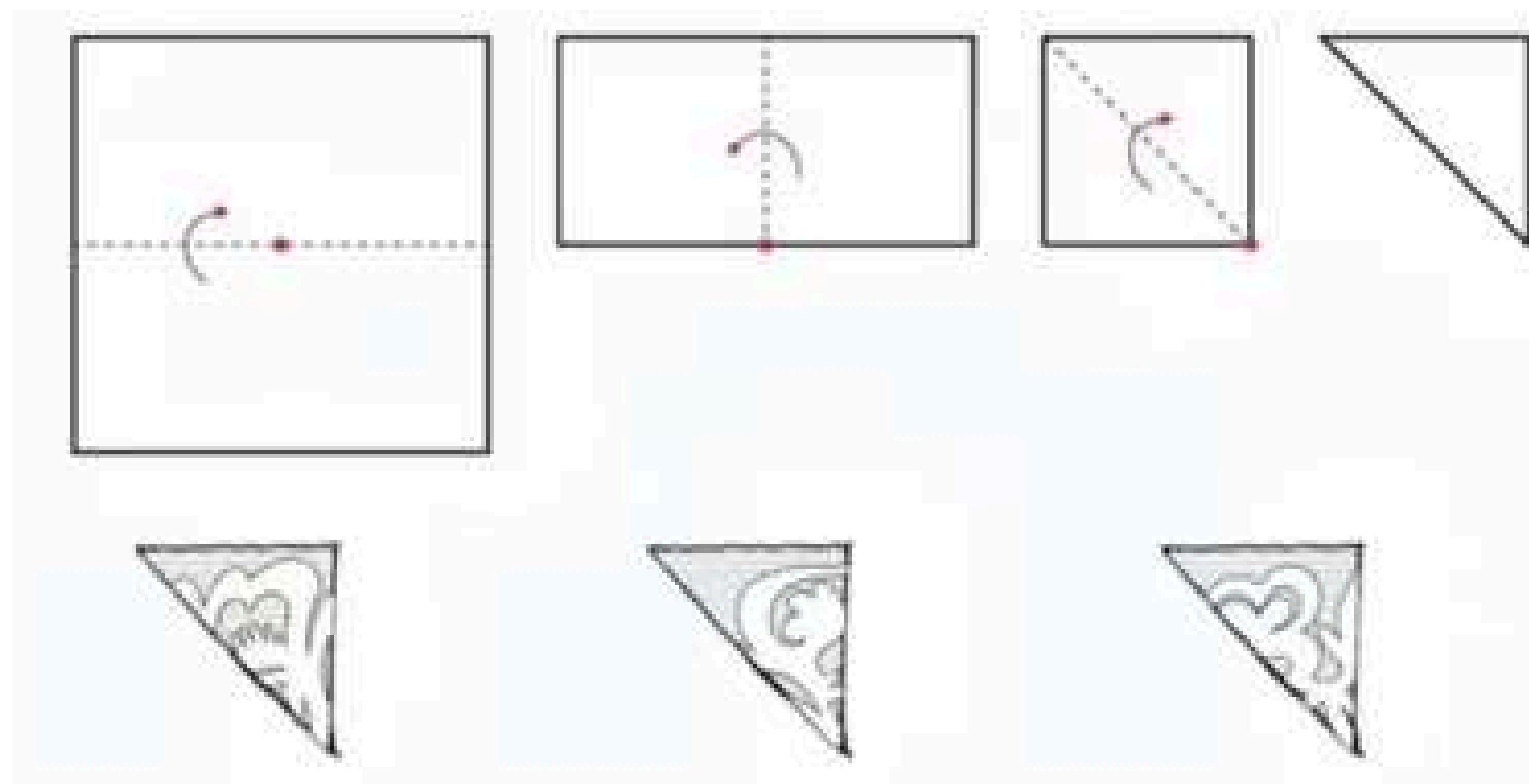


4. 折叠



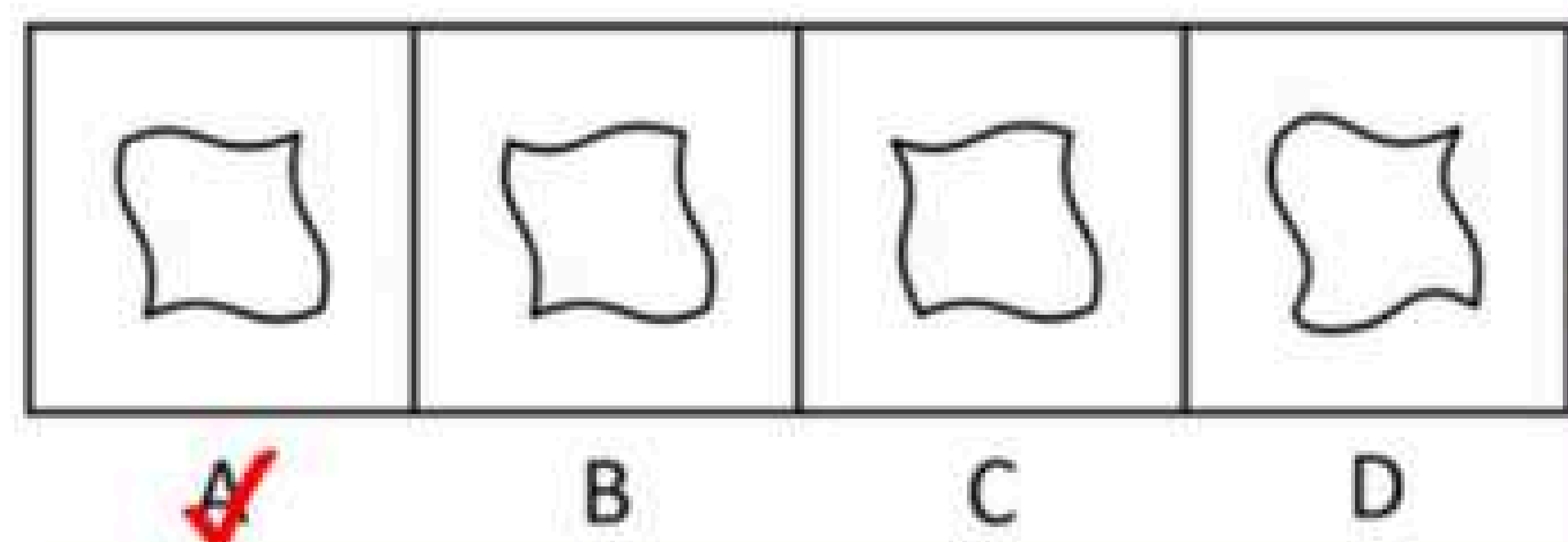
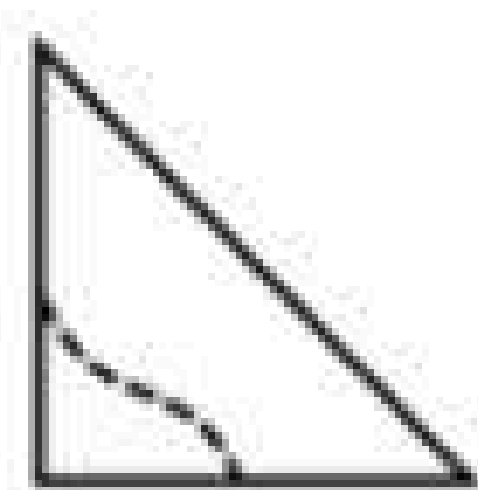
来源于小红书@贝栗子

本质上考查“对称性”

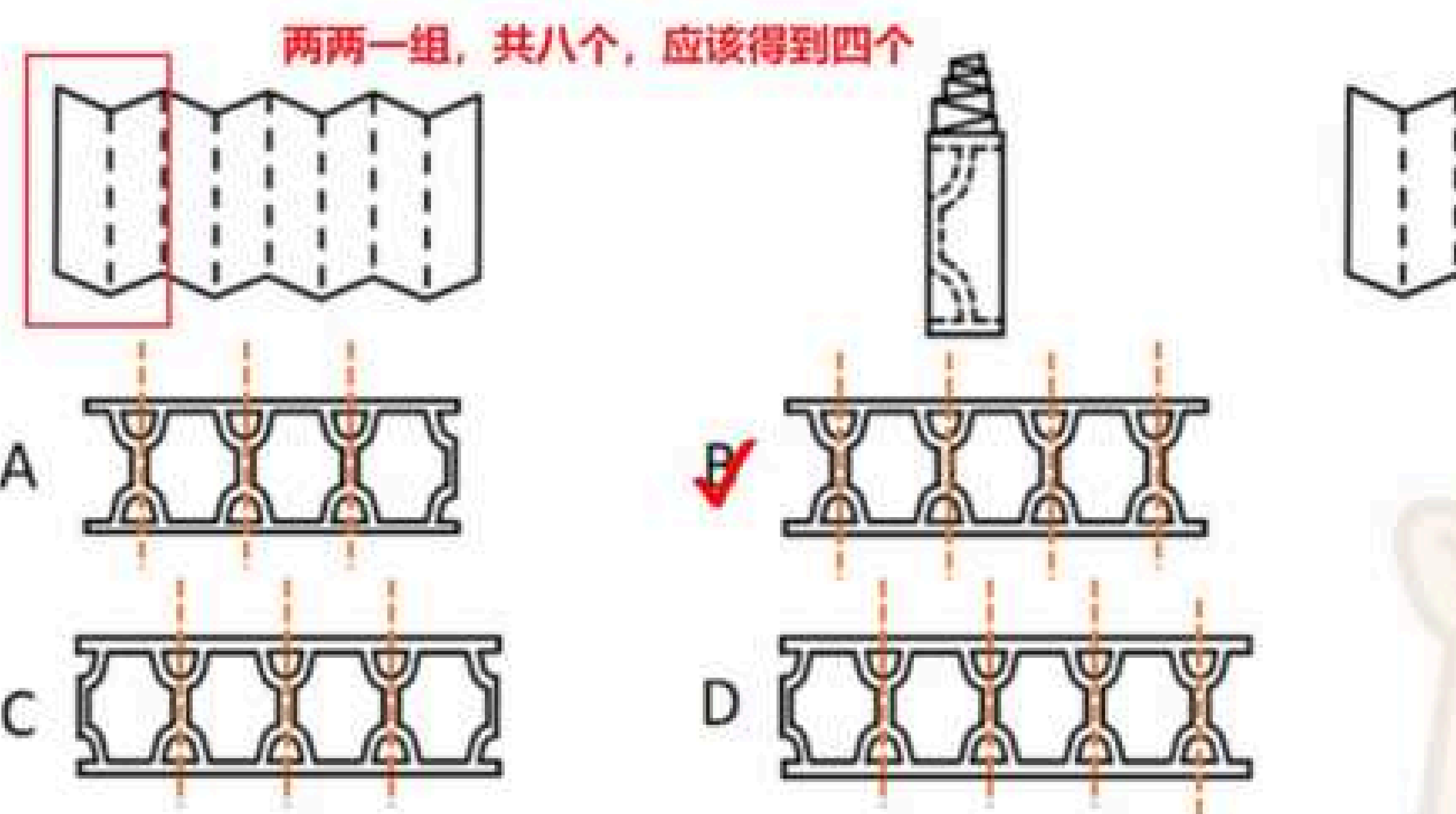
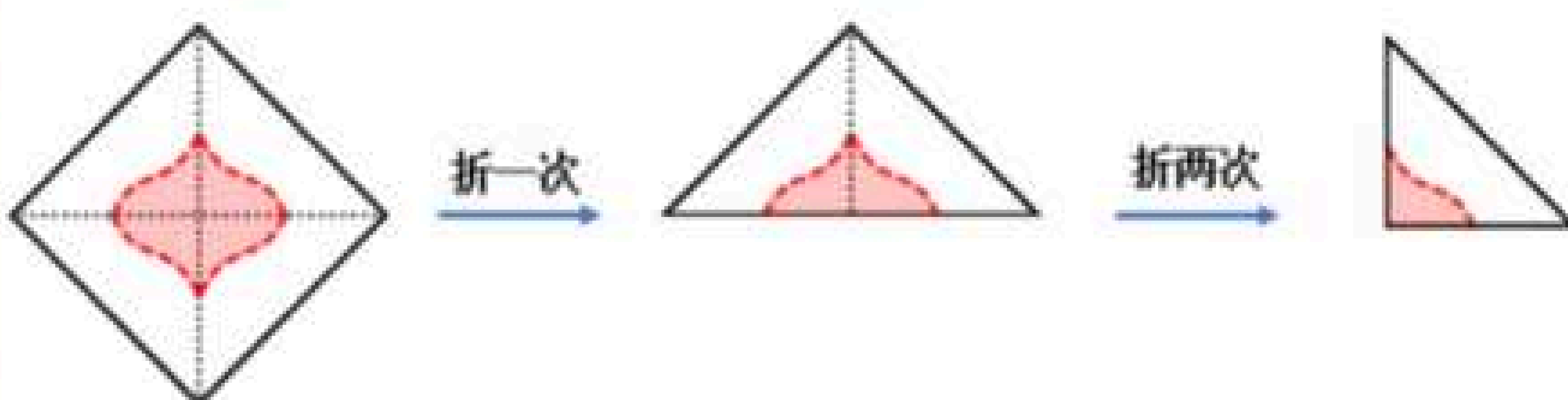


两个大等腰梯形应该要相邻,只有C符合

19. (24广东-65%) 如图所示, 正方形卡片沿对角线折叠两次后得到一个三角形, 沿着虚线裁剪后, 再展开卡片, 则展开的图形最有可能是。



将一长方形纸沿左图虚线折叠后, 沿右图虚线裁剪, 得到的窗花是:



左侧长方形纸沿虚线折叠后, 形成8个形状大小完全相等的长方形, 两两一组, 共分为4组, 后按照右图虚线花纹进行裁剪, 得到4个镂空完整的花纹图案, 只有B项符合。

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有一样的图案 (3类)



没有一样的图案 (3类)

