# 4.8 3D Block Counting: 2-hour Pack

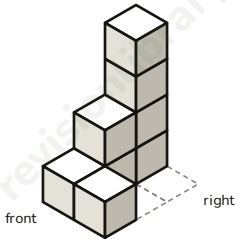
GL ASSESSMENT GL-EP.N10 · Calculators not allowed · about 120 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

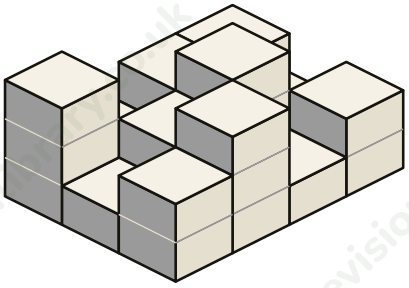
**Answer ALL questions. Show all your working.**

**1** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. How many unit cubes make up this solid altogether?



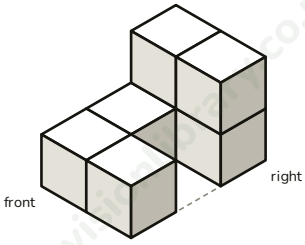

| A | B | C | D | E |
|---|---|---|---|---|
| 8 | 10 | 9 | 4 | 7 |

**2** How many unit cubes make up this solid altogether?



| A | B | C | D | E |
|---|---|---|---|---|
| 20 | 21 | 22 | 23 | 24 |

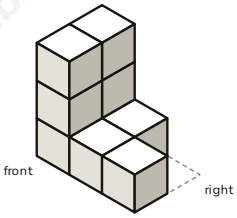
**3** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. This solid stands inside an invisible box measuring 2 x 3 x 2 unit cubes (so a completely full box would need 12 cubes in total). How many extra unit cubes would need to be added to fill the box completely, with no gaps?

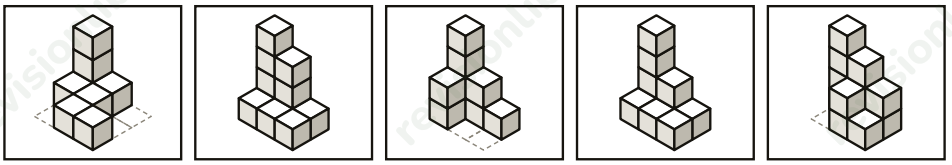



| A | B | C | D | E |
|---|---|---|---|---|
| 7 | 12 | 5 | 4 | 6 |

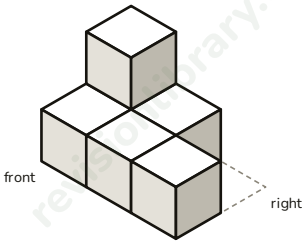

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**4** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. Which option, A to E, shows a solid made from exactly 1 more cube than the solid shown?



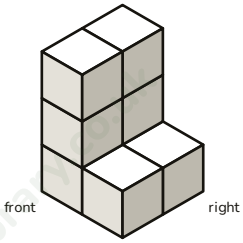




**5** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. How many unit cubes make up this solid altogether?



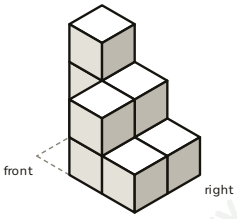

| A | B | C | D | E |
|---|---|---|---|---|
| 6 | 4 | 7 | 8 | 5 |

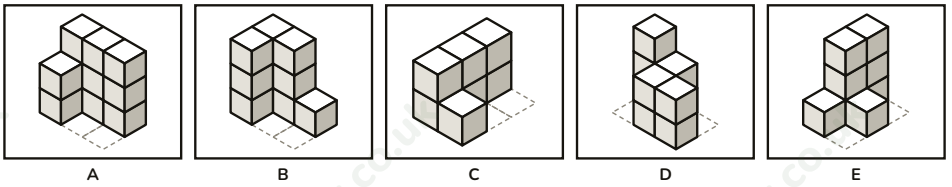
**6**



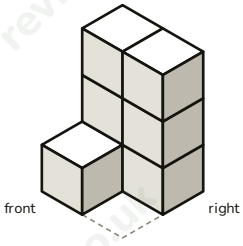

| A | B | C | D | E |
|---|---|---|---|---|
| 4 | 9 | 7 | 10 | 8 |

**7** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. Which option, A to E, shows a solid made from the same number of cubes as the solid shown?



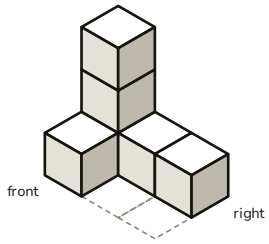

**8** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. How many unit cubes make up this solid altogether?




| A | B | C | D | E |
|---|---|---|---|---|
| 7 | 6 | 3 | 9 | 8 |

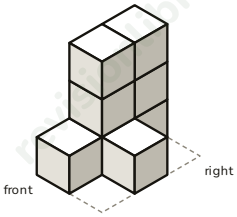

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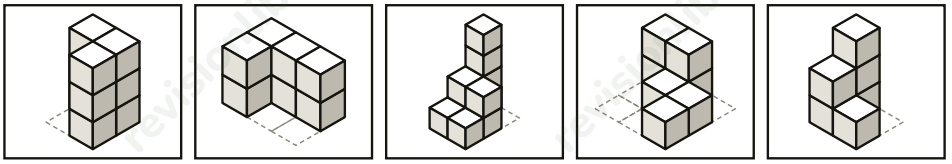
**9** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. How many cubes would have to be removed from this solid so that only a single layer (every stack one cube high) is left?



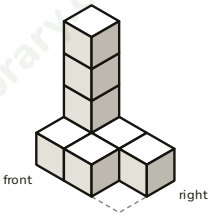

| A | B | C | D | E |
|---|---|---|---|---|
| 4 | 1 | 6 | 3 | 2 |

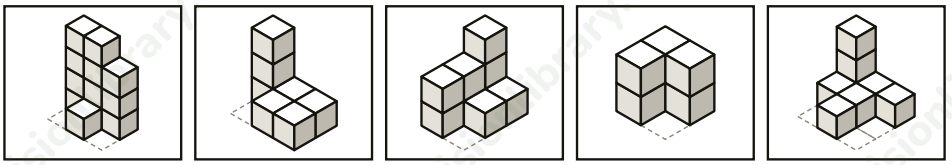
**10** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. Which option, A to E, shows a solid made from the same number of cubes as the solid shown?



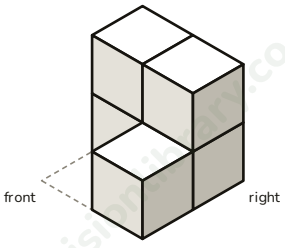




**11** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. Which option, A to E, shows a solid made from exactly 1 more cube than the solid shown?



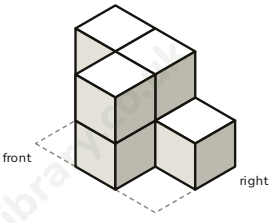



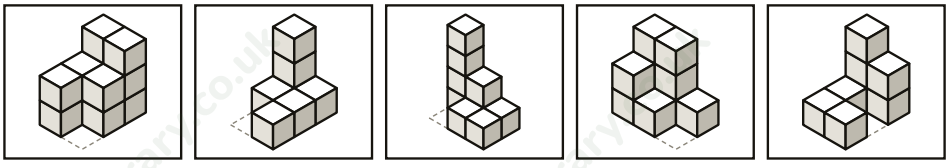

**12** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. How many unit cubes make up this solid altogether?




| A | B | C | D | E |
|---|---|---|---|---|
| 4 | 5 | 7 | 6 | 3 |

**13** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. Which option, A to E, shows a solid made from exactly 3 more cubes than the solid shown?

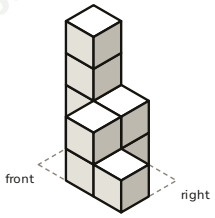


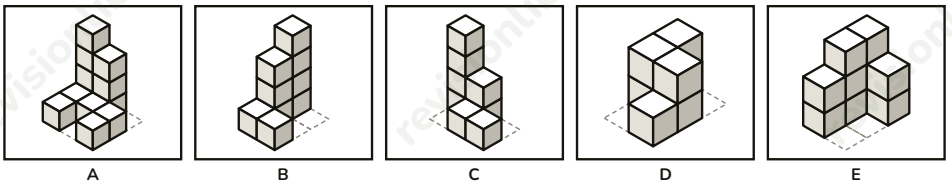





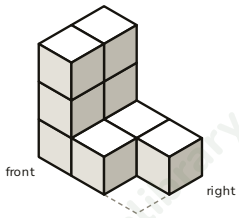
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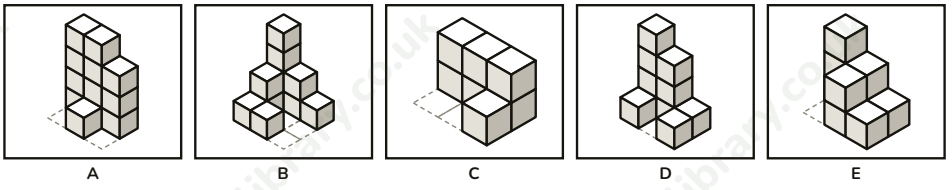
**14** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. Which option, A to E, shows a solid made from the same number of cubes as the solid shown?



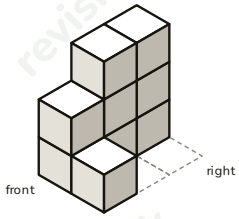



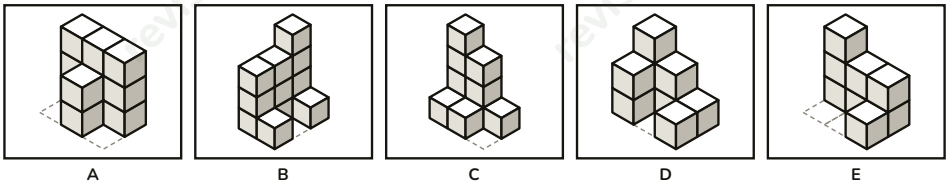

**15**



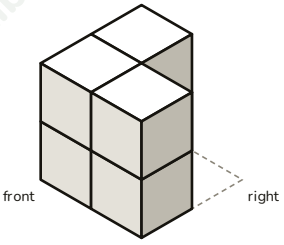



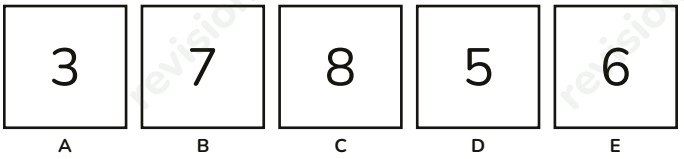

**16**



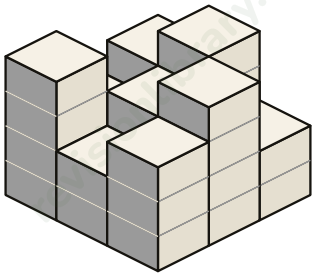



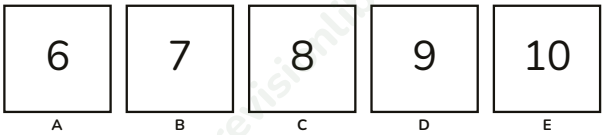

**17** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. How many unit cubes make up this solid altogether?




**18** This solid stands inside an invisible box measuring 3 x 3 x 4 unit cubes (so a completely full box would need 36 cubes in total). How many extra unit cubes would need to be added to fill the box completely, with no gaps?

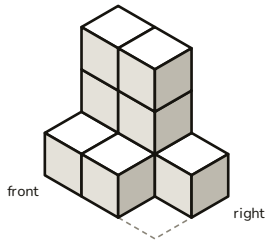






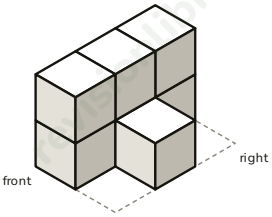
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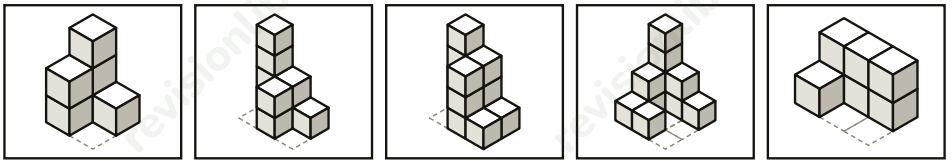
**19** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. How many cubes would have to be removed from this solid so that only a single layer (every stack one cube high) is left?



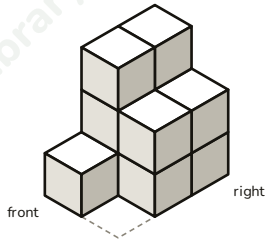

| A | B | C | D | E |
|---|---|---|---|---|
| 5 | 6 | 4 | 9 | 3 |

**20** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. Which option, A to E, shows a solid made from exactly 2 more cubes than the solid shown?



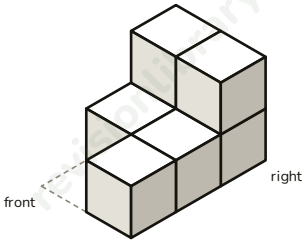




**21** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. How many cubes would have to be removed from this solid so that only a single layer (every stack one cube high) is left?




| A | B | C | D | E |
|---|---|---|---|---|
| 6 | 7 | 5 | 8 | 11 |

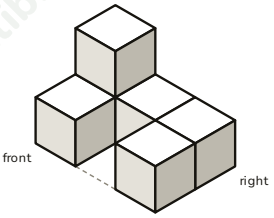
**22** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. This solid stands inside an invisible box measuring 2 x 3 x 2 unit cubes (so a completely full box would need 12 cubes in total). How many extra unit cubes would need to be added to fill the box completely, with no gaps?

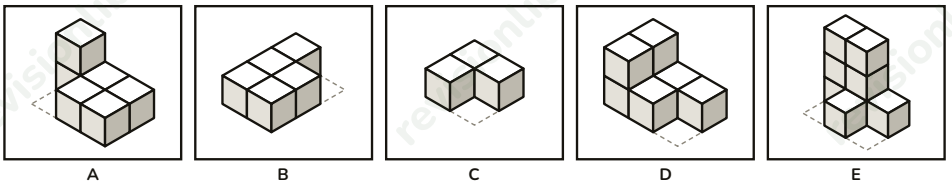



| A | B | C | D | E |
|---|---|---|---|---|
| 6 | 5 | 12 | 4 | 7 |

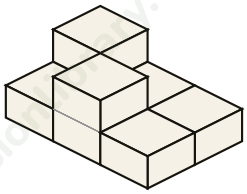

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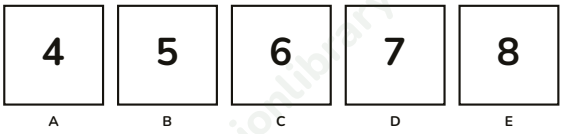
**23** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. Which option, A to E, shows a solid made from the same number of cubes as the solid shown?



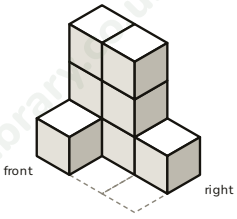



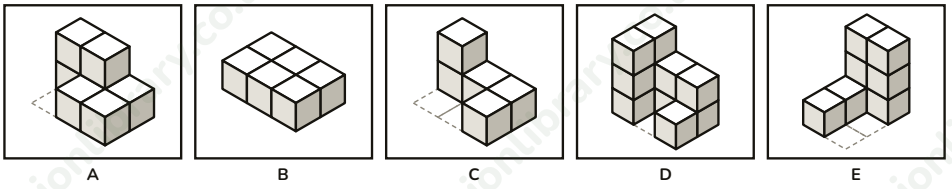

**24** How many unit cubes make up this solid altogether?



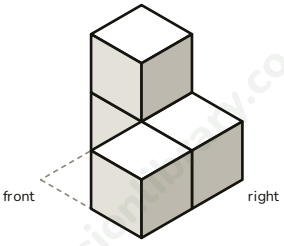


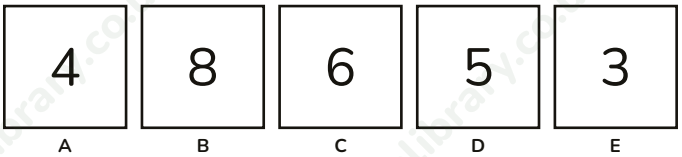

**25** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. Which option, A to E, shows a solid made from the same number of cubes as the solid shown?



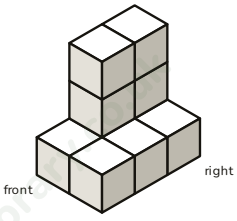



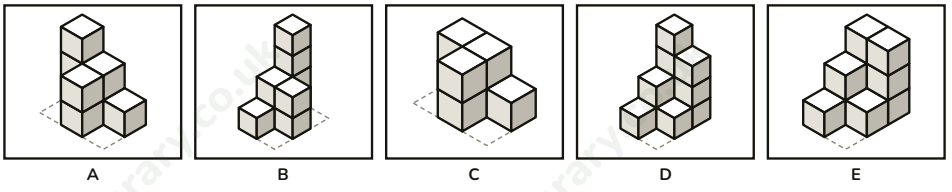

**26** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. This solid stands inside an invisible box measuring 2 x 2 x 2 unit cubes (so a completely full box would need 8 cubes in total). How many extra unit cubes would need to be added to fill the box completely, with no gaps?




**27** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. Which option, A to E, shows a solid made from exactly 1 fewer cube than the solid shown?

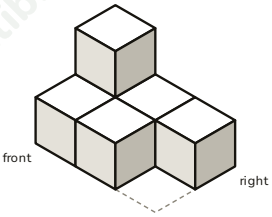


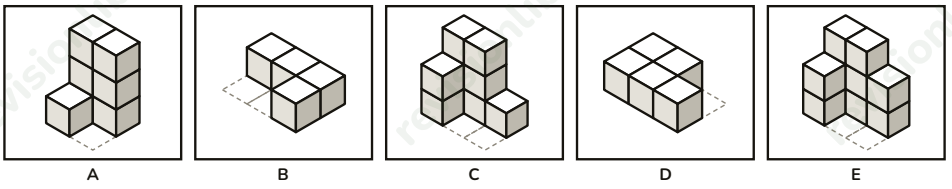





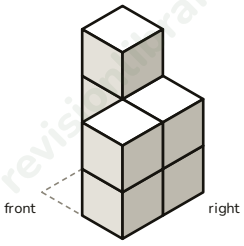
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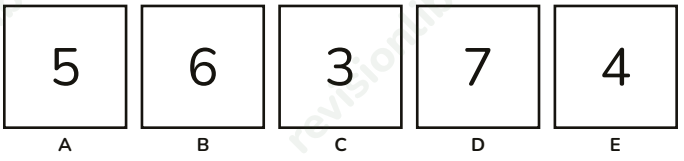
**28** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. Which option, A to E, shows a solid made from exactly 1 more cube than the solid shown?



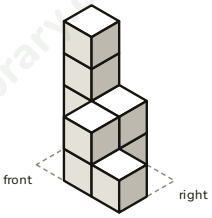



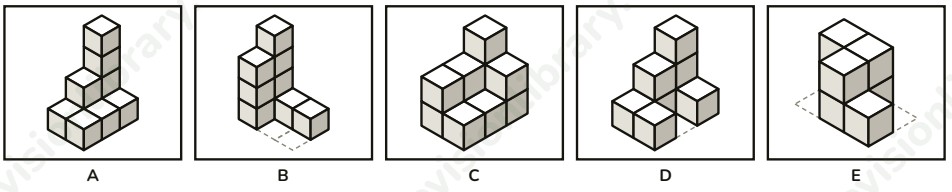

**29** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. How many cubes would have to be removed from this solid so that only a single layer (every stack one cube high) is left?



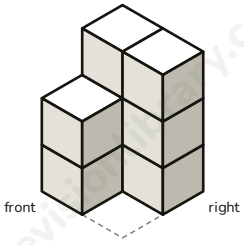



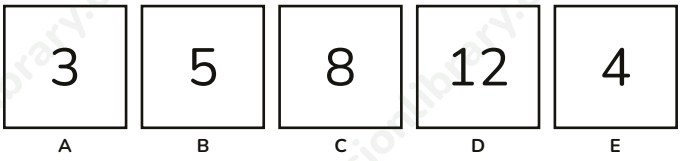

**30** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. Which option, A to E, shows a solid made from the same number of cubes as the solid shown?




**31** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. This solid stands inside an invisible box measuring 2 x 2 x 3 unit cubes (so a completely full box would need 12 cubes in total). How many extra unit cubes would need to be added to fill the box completely, with no gaps?

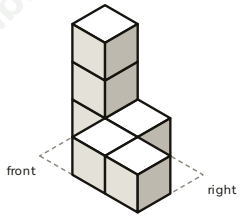


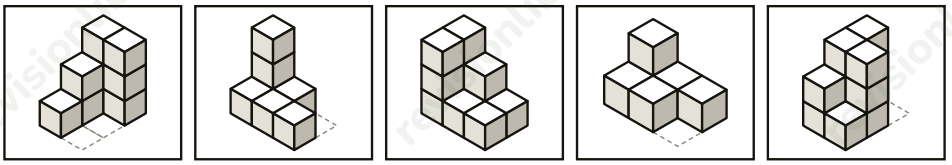





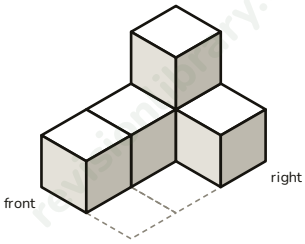
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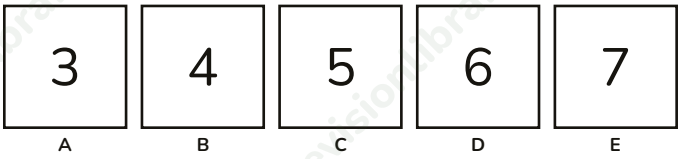
**32** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. Which option, A to E, shows a solid made from exactly 3 more cubes than the solid shown?



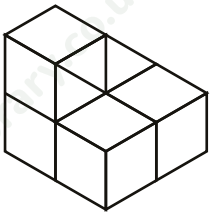



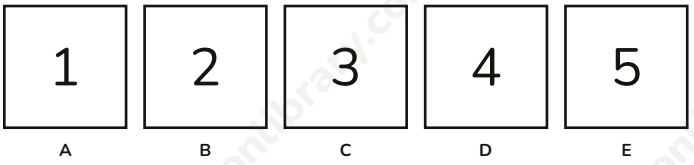

**33** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. How many unit cubes make up this solid altogether?



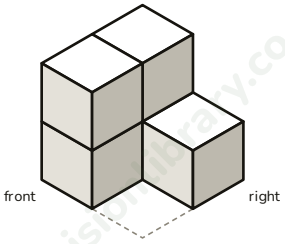



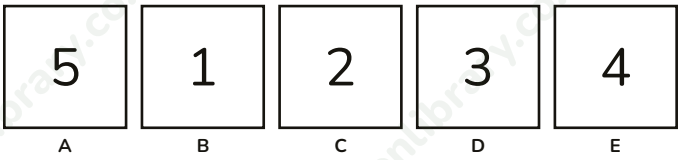

**34** This solid stands inside an invisible box measuring 2 x 2 x 2 unit cubes (so a completely full box would need 8 cubes in total). How many extra unit cubes would need to be added to fill the box completely, with no gaps?



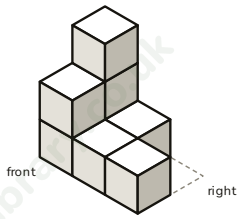


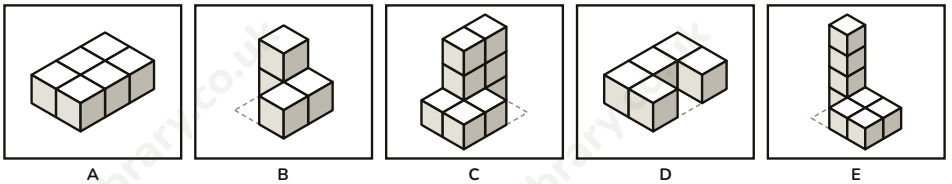

**35** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. How many cubes would have to be removed from this solid so that only a single layer (every stack one cube high) is left?




**36** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. Which option, A to E, shows a solid made from exactly 2 fewer cubes than the solid shown?

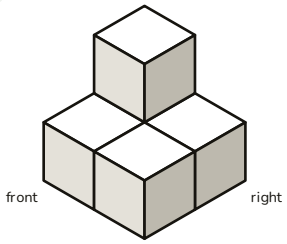




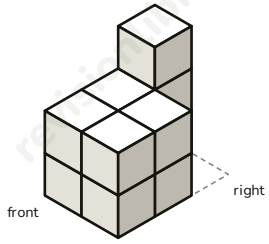
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**37** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. How many cubes would have to be removed from this solid so that only a single layer (every stack one cube high) is left?



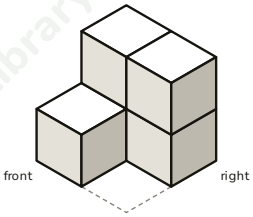

| A | B | C | D | E |
|---|---|---|---|---|
| 2 | 4 | 3 | 5 | 1 |

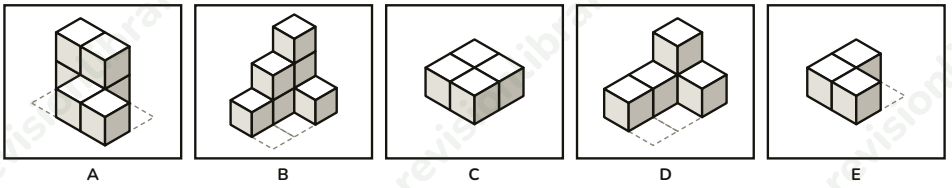
**38** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. How many unit cubes make up this solid altogether?



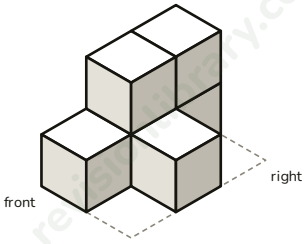

| A | B | C | D | E |
|---|---|---|---|---|
| 13 | 5 | 12 | 11 | 10 |

**39** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. Which option, A to E, shows a solid made from the same number of cubes as the solid shown?



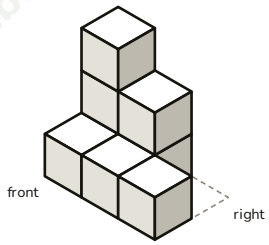

**40** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. This solid stands inside an invisible box measuring 2 x 3 x 2 unit cubes (so a completely full box would need 12 cubes in total). How many extra unit cubes would need to be added to fill the box completely, with no gaps?




| A | B | C | D | E |
|---|---|---|---|---|
| 6 | 7 | 5 | 8 | 12 |

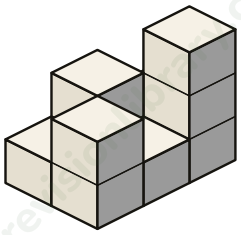

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**41** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. How many individual unit cubes are touching the table (the surface the solid stands on)?



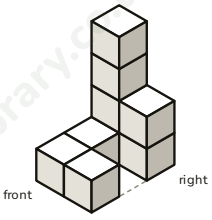

| A | B | C | D | E |
|---|---|---|---|---|
| 6 | 7 | 4 | 5 | 8 |

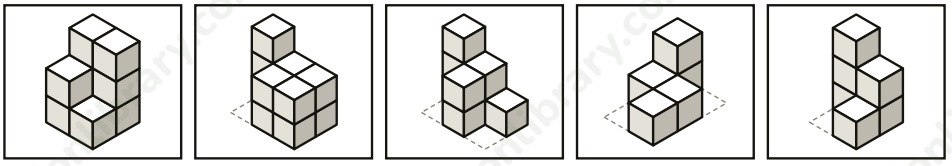
**42** How many unit cubes make up this solid altogether?



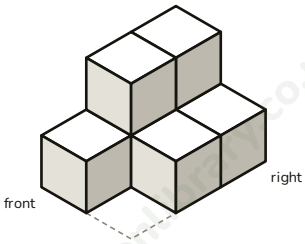
| A | B | C | D | E |
|---|---|---|---|---|
| 7 | 8 | 9 | 10 | 11 |

**43** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. Which option, A to E, shows a solid made from exactly 1 fewer cube than the solid shown?



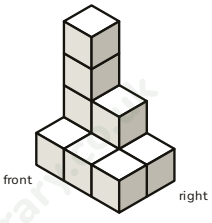



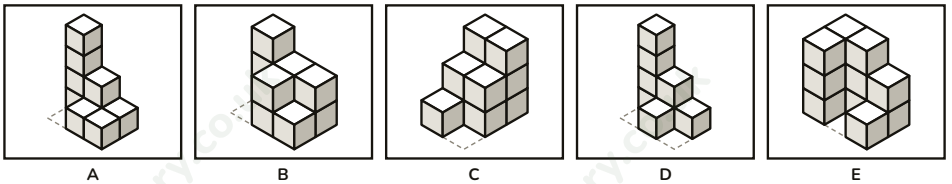

**44** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. How many unit cubes make up this solid altogether?




| A | B | C | D | E |
|---|---|---|---|---|
| 8 | 6 | 9 | 5 | 7 |

**45** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. Which option, A to E, shows a solid made from the same number of cubes as the solid shown?

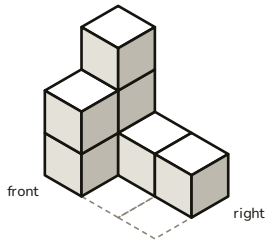




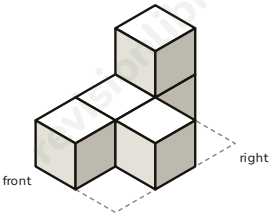
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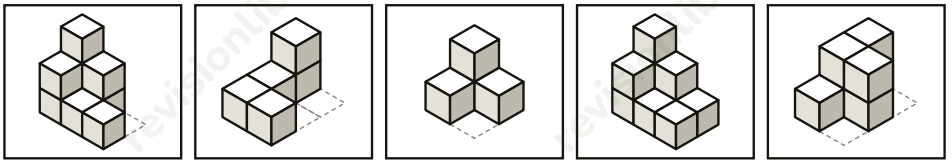
**46** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. How many cubes would have to be removed from this solid so that only a single layer (every stack one cube high) is left?



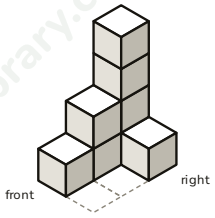

| A | B | C | D | E |
|---|---|---|---|---|
| 7 | 5 | 3 | 4 | 2 |

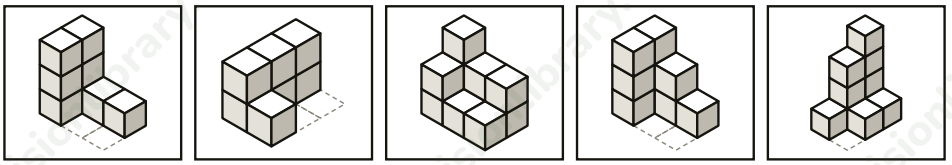
**47** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. Which option, A to E, shows a solid made from exactly 2 more cubes than the solid shown?



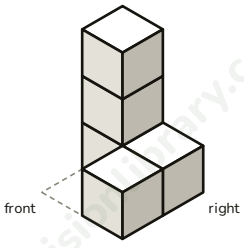




**48** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. Which option, A to E, shows a solid made from exactly 1 more cube than the solid shown?



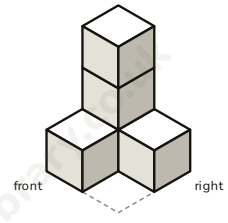



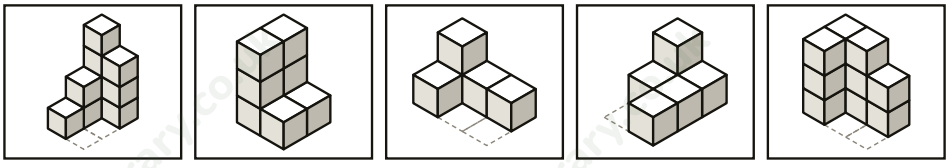

**49** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. How many unit cubes make up this solid altogether?




| A | B | C | D | E |
|---|---|---|---|---|
| 5 | 4 | 6 | 3 | 7 |

**50** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. Which option, A to E, shows a solid made from exactly 3 more cubes than the solid shown?

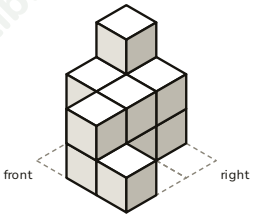


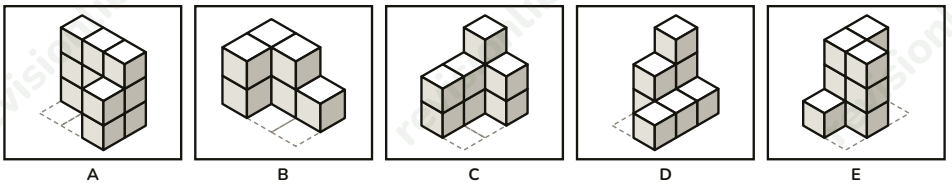





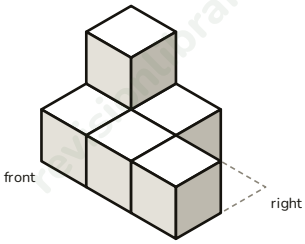
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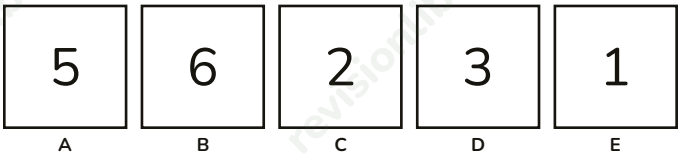
**51** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. Which option, A to E, shows a solid made from exactly 3 fewer cubes than the solid shown?



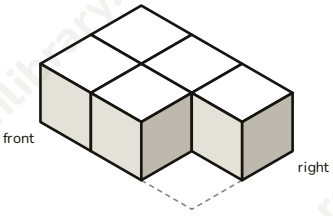



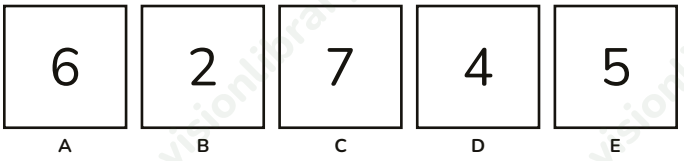

**52** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. How many cubes would have to be removed from this solid so that only a single layer (every stack one cube high) is left?



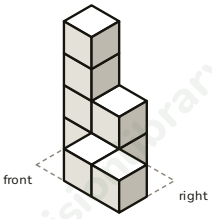



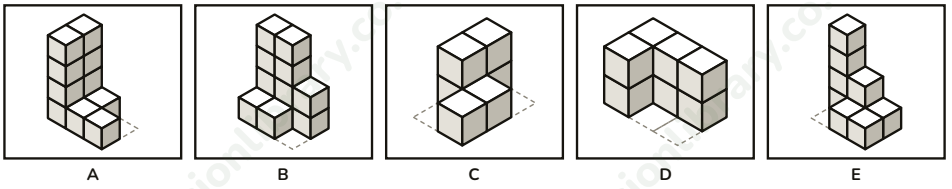

**53** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. How many individual unit cubes are touching the table (the surface the solid stands on)?




**54** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. Which option, A to E, shows a solid made from exactly 1 more cube than the solid shown?

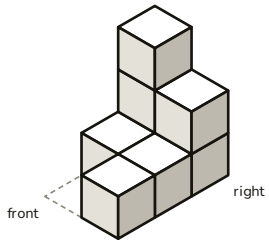




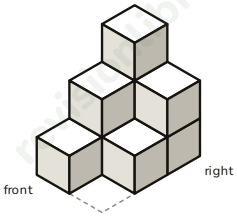
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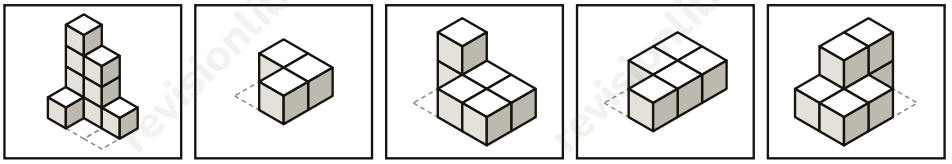
**55** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. How many cubes would have to be removed from this solid so that only a single layer (every stack one cube high) is left?



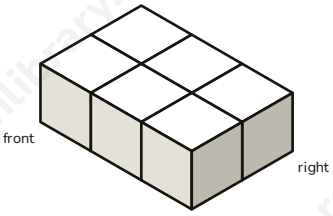

| A | B | C | D | E |
|---|---|---|---|---|
| 8 | 5 | 4 | 3 | 2 |

**56** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. Which option, A to E, shows a solid made from exactly 3 fewer cubes than the solid shown?



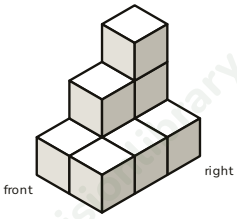



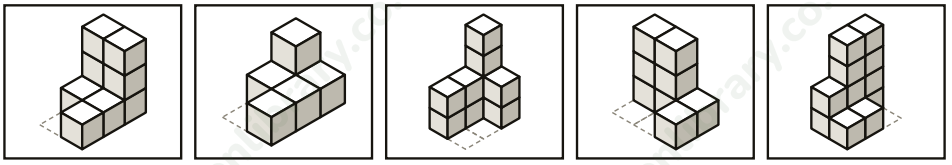

**57** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. How many unit cubes make up this solid altogether?




| A | B | C | D | E |
|---|---|---|---|---|
| 4 | 6 | 8 | 5 | 7 |

**58** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. Which option, A to E, shows a solid made from the same number of cubes as the solid shown?

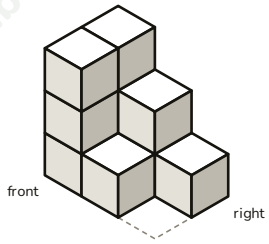




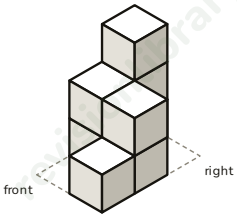
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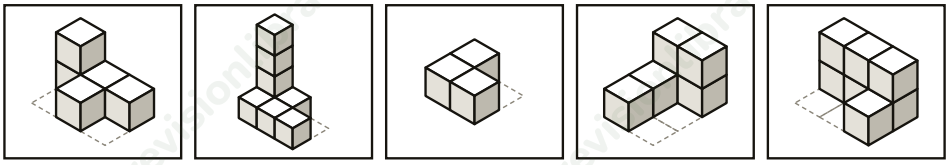
**59** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. How many individual unit cubes are touching the table (the surface the solid stands on)?



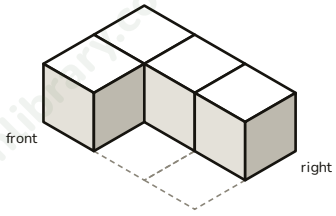

| A | B | C | D | E |
|---|---|---|---|---|
| 6 | 4 | 7 | 5 | 10 |

**60** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. Which option, A to E, shows a solid made from exactly 2 fewer cubes than the solid shown?



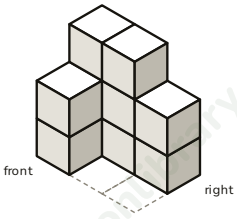



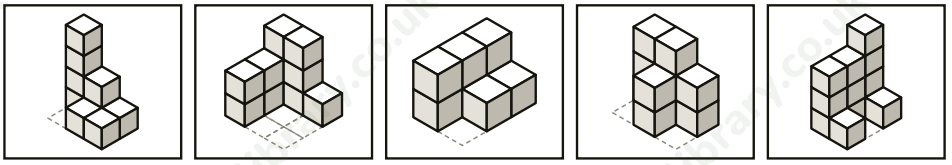

**61** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. How many unit cubes make up this solid altogether?



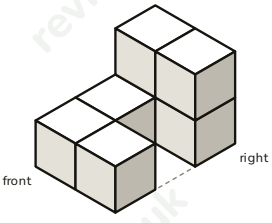

| A | B | C | D | E |
|---|---|---|---|---|
| 2 | 4 | 3 | 5 | 6 |

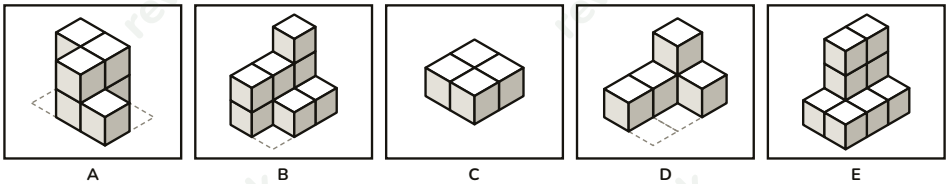
**62** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. Which option, A to E, shows a solid made from the same number of cubes as the solid shown?




**63**

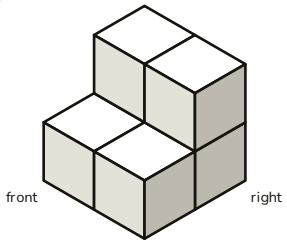




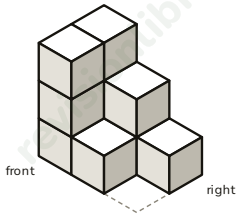
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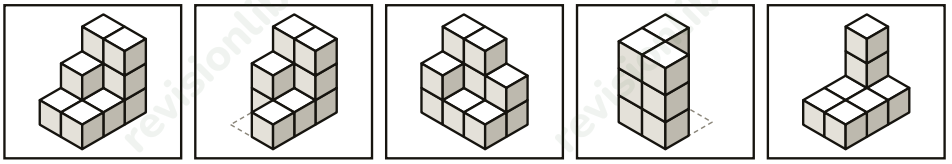
**64** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. This solid stands inside an invisible box measuring 2 x 2 x 2 unit cubes (so a completely full box would need 8 cubes in total). How many extra unit cubes would need to be added to fill the box completely, with no gaps?



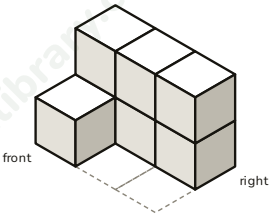

| A | B | C | D | E |
|---|---|---|---|---|
| 1 | 6 | 2 | 8 | 3 |

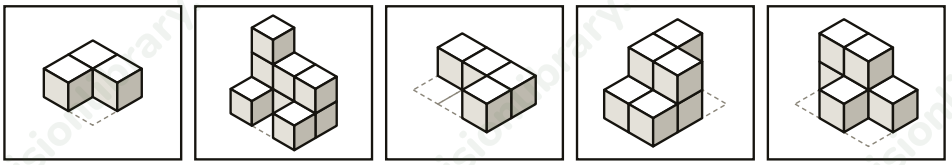
**65** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. Which option, A to E, shows a solid made from the same number of cubes as the solid shown?



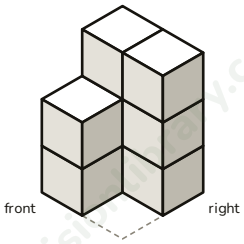




**66** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. Which option, A to E, shows a solid made from exactly 1 fewer cube than the solid shown?



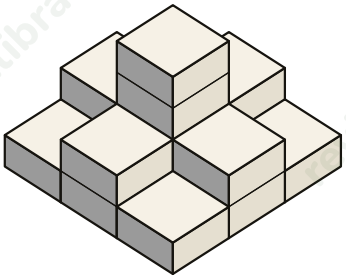

**67** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. How many unit cubes make up this solid altogether?

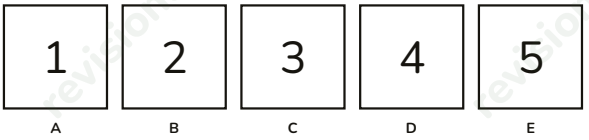



| A | B | C | D | E |
|---|---|---|---|---|
| 6 | 9 | 8 | 7 | 3 |

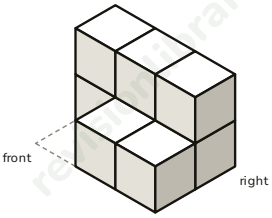

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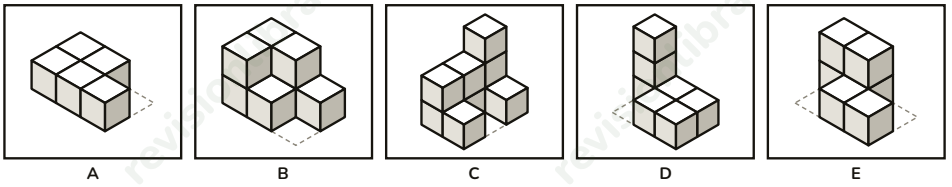
**68** A unit cube counts as completely hidden if it has no visible left, right, front, back or top face - the underside resting on the table does not count. How many unit cubes in this solid are completely hidden from view?



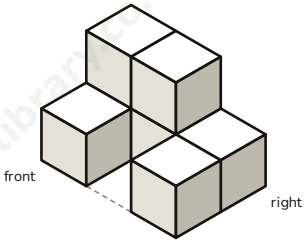


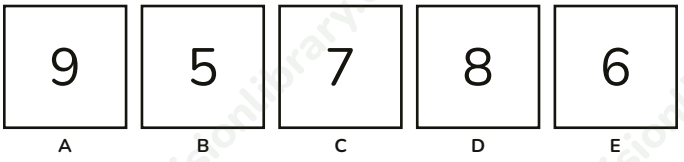

**69** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. Which option, A to E, shows a solid made from exactly 1 fewer cube than the solid shown?



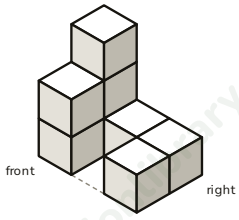



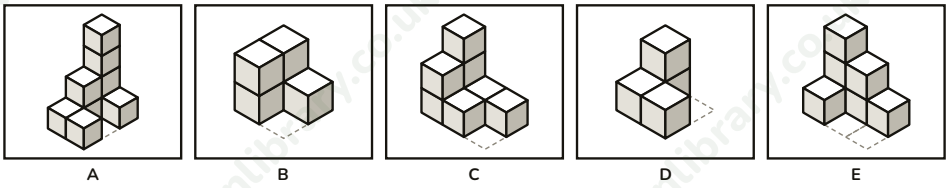

**70** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. How many unit cubes make up this solid altogether?



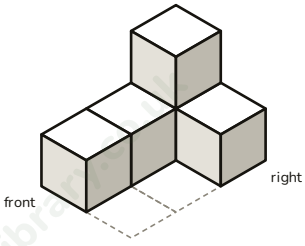



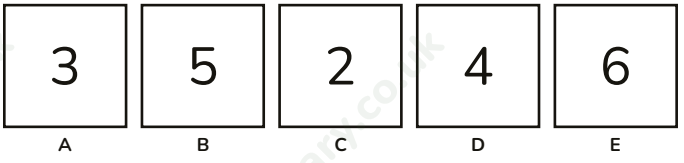

**71** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. Which option, A to E, shows a solid made from exactly 1 fewer cube than the solid shown?




**72** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. How many individual unit cubes are touching the table (the surface the solid stands on)?

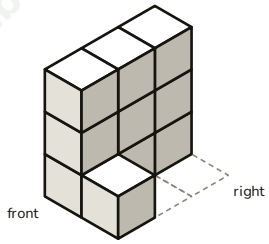




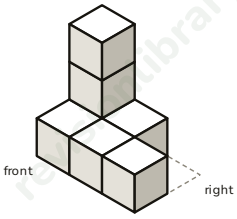
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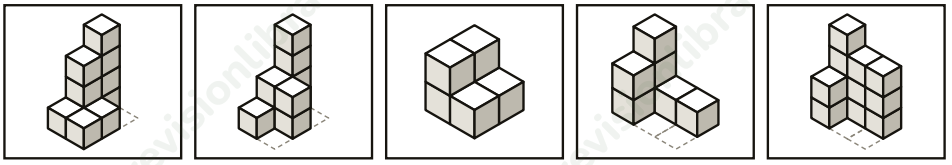
**73** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. How many unit cubes make up this solid altogether?



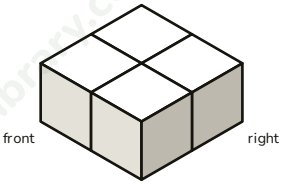

| A | B | C | D | E |
|---|---|---|---|---|
| 10 | 11 | 9 | 12 | 4 |

**74** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. Which option, A to E, shows a solid made from exactly 2 more cubes than the solid shown?



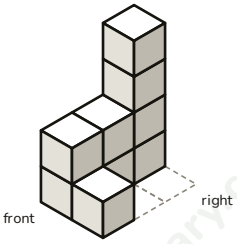




**75** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. How many individual unit cubes are touching the table (the surface the solid stands on)?



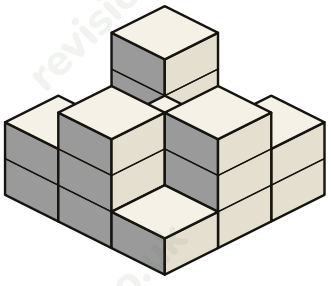

| A | B | C | D | E |
|---|---|---|---|---|
| 4 | 5 | 6 | 2 | 3 |

**76**




| A | B | C | D | E |
|---|---|---|---|---|
| 4 | 5 | 8 | 9 | 3 |

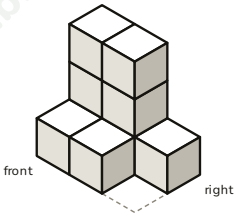
**77** How many unit cubes make up this solid altogether?

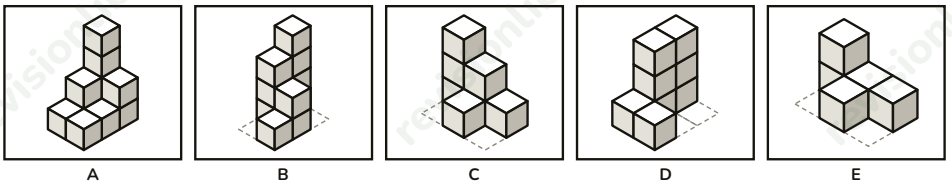


| A | B | C | D | E |
|---|---|---|---|---|
| 16 | 17 | 18 | 19 | 20 |

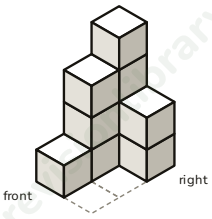

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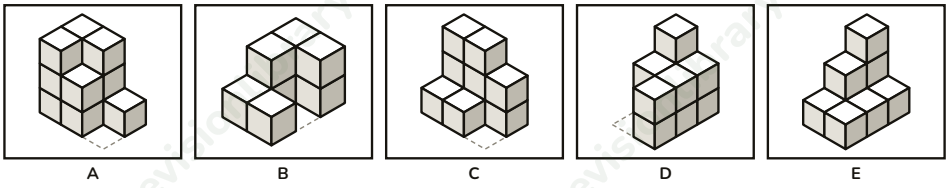
**78** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. Which option, A to E, shows a solid made from exactly 1 fewer cube than the solid shown?



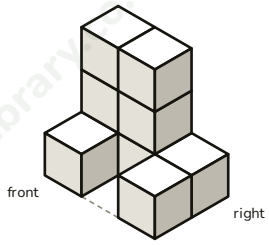



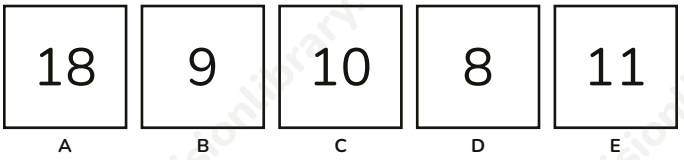

**79** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. Which option, A to E, shows a solid made from the same number of cubes as the solid shown?




**80** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. This solid stands inside an invisible box measuring 3 x 2 x 3 unit cubes (so a completely full box would need 18 cubes in total). How many extra unit cubes would need to be added to fill the box completely, with no gaps?

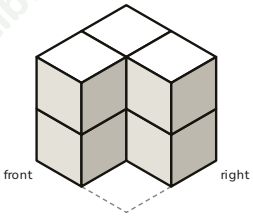


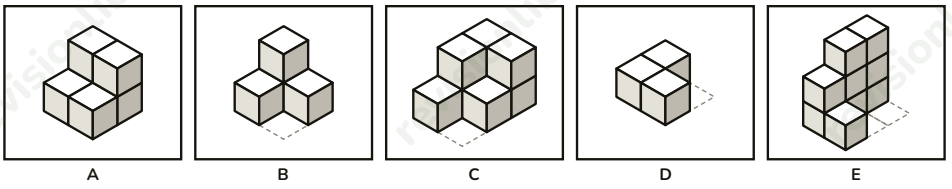





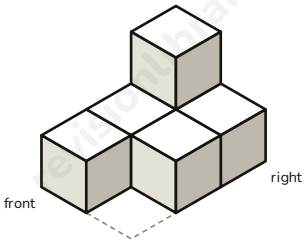
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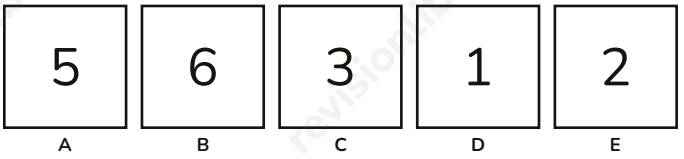
**81** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. Which option, A to E, shows a solid made from the same number of cubes as the solid shown?




**82** Rule: every cube sits on the table or on another cube (nothing floats), every stack of cubes can be seen from above in the picture (no stack is hidden behind another), and a cube you cannot see is always one that is needed to hold up the cubes you can. A unit cube counts as completely hidden if none of its faces (top, front or right) can be seen in the picture. The underside resting on the table does not count. How many unit cubes in this solid are completely hidden from view?





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# Mark scheme · 4.8 3D Block Counting: 2-hour Pack

## Question 1

Correct option identified (8): Count each stack: the heights add up to 8, including the cubes you cannot see. **B1**

**Answer: A) 8**

## Question 2

Correct option identified (23 oe) - the three row totals 8, 7 and 8 sum to 23 **B1**

**Answer: 23**

## Question 3

Correct option identified (5): The full box needs 12 cubes and the solid has 7, so 12 - 7 = 5. **B1**

**Answer: C) 5**

## Question 4

Correct option identified: the stem solid has 9 cubes so the answer needs 10; the options have 8, 11, 9, 10, 12 cubes. **B1**

**Answer: D) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 3 columns (A, B, C) by 2 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 1, B = 1, C = 1; Row 2: A = 4, B = 2, C = 1. A height of 0 means that grid square is bare table.**

## Question 5

Correct option identified (6): Count each stack: the heights add up to 6, including the cubes you cannot see. **B1**

**Answer: A) 6**

## Question 6

Correct option identified (8): Count each stack: the heights add up to 8, including the cubes you cannot see. **B1**

**Answer: E) 8**

## Question 7

Correct option identified: the stem solid has 9 cubes so the answer needs 9; the options have 11, 10, 7, 9, 8 cubes. **B1**

**Answer: D) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 3 columns (A, B, C) by 2 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 0, B = 2, C = 2; Row 2: A = 3, B = 2, C = 0. A height of 0 means that grid square is bare table.**

## Question 8

Correct option identified (7): Count each stack: the heights add up to 7, including the cubes you cannot see. **B1**

**Answer: A) 7**

## Question 9

Correct option identified (2): Each of the 4 stacks keeps 1 cube: 6 - 4 = 2 to remove. **B1**

**Answer: E) 2**

## Question 10

Correct option identified: the stem solid has 8 cubes so the answer needs 8; the options have 9, 8, 10, 7, 6 cubes. **B1**

**Answer: B) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 3 columns (A, B, C) by 2 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 2, B = 0, C = 0; Row 2: A = 2, B = 2, C = 2. A height of 0 means that grid square is bare table.**

## Question 11

Correct option identified: the stem solid has 8 cubes so the answer needs 9; the options have 12, 7, 9, 6, 8 cubes. **B1**

**Answer: C) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 2 columns (A, B) by 3 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 2, B = 0; Row 2: A = 2, B = 1; Row 3: A = 3, B = 1. A height of 0 means that grid square is bare table.**

## Question 12

Correct option identified (5): Count each stack: the heights add up to 5, including the cubes you cannot see. **B1**

**Answer: B) 5**

## Question 13

Correct option identified: the stem solid has 7 cubes so the answer needs 10; the options have 12, 7, 9, 10, 8 cubes. **B1**

**Answer: D) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 3 columns (A, B, C) by 2 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 2, B = 1, C = 0; Row 2: A = 3, B = 3, C = 1. A height of 0 means that grid square is bare table.**

## Question 14

Correct option identified: the stem solid has 9 cubes so the answer needs 9; the options have 12, 9, 8, 7, 10 cubes. **B1**

**Answer: B) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 2 columns (A, B) by 3 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 1, B = 1; Row 2: A = 3, B = 0; Row 3: A = 4, B = 0. A height of 0 means that grid square is bare table.**

## Question 15

Correct option identified: the stem solid has 9 cubes so the answer needs 9; the options have 12, 11, 7, 10, 9 cubes. **B1**

**Answer: E) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 3 columns (A, B, C) by 2 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 0, B = 2, C = 1; Row 2: A = 3, B = 2, C = 1. A height of 0 means that grid square is bare table.**

## Question 16

Correct option identified: the stem solid has 9 cubes so the answer needs 9; the options have 11, 12, 10, 9, 8 cubes. **B1**

**Answer: D) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 3 columns (A, B, C) by 2 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 2, B = 0, C = 1; Row 2: A = 3, B = 2, C = 1. A height of 0 means that grid square is bare table.**


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## Question 17

Correct option identified (6): Count each stack: the heights add up to 6, including the cubes you cannot see. **B1**

**Answer: E) 6**

## Question 18

Correct option identified (9 oe) - the solid uses 27 cubes, so 36 minus 27 leaves 9 cubes needed to complete the box **B1**

**Answer: 9**

## Question 19

Correct option identified (4): Each of the 5 stacks keeps 1 cube: 9 - 5 = 4 to remove. **B1**

**Answer: C) 4**

## Question 20

Correct option identified: the stem solid has 7 cubes so the answer needs 9; the options have 6, 9, 12, 11, 7 cubes. **B1**

**Answer: B) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 3 columns (A, B, C) by 2 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 0, B = 2, C = 0; Row 2: A = 4, B = 2, C = 1. A height of 0 means that grid square is bare table.**

## Question 21

Correct option identified (6): Each of the 5 stacks keeps 1 cube: 11 - 5 = 6 to remove. **B1**

**Answer: A) 6**

## Question 22

Correct option identified (5): The full box needs 12 cubes and the solid has 7, so 12 - 7 = 5. **B1**

**Answer: B) 5**

## Question 23

Correct option identified: the stem solid has 6 cubes so the answer needs 6; the options have 6, 5, 3, 7, 8 cubes. **B1**

**Answer: A) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 3 columns (A, B, C) by 2 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 0, B = 1, C = 1; Row 2: A = 2, B = 1, C = 1. A height of 0 means that grid square is bare table.**

## Question 24

Correct option identified (8 oe) - the six stack heights 1, 1, 2, 1, 1 and 2 sum to 8 **B1**

**Answer: 8**

## Question 25

Correct option identified: the stem solid has 8 cubes so the answer needs 8; the options have 7, 6, 5, 11, 8 cubes. **B1**

**Answer: E) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 2 columns (A, B) by 3 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 1, B = 0; Row 2: A = 1, B = 0; Row 3: A = 3, B = 3. A height of 0 means that grid square is bare table.**

## Question 26

Correct option identified (4): The full box needs 8 cubes and the solid has 4, so 8 - 4 = 4. **B1**

**Answer: A) 4**

## Question 27

Correct option identified: the stem solid has 10 cubes so the answer needs 9; the options have 8, 9, 7, 11, 10 cubes. **B1**

**Answer: B) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 2 columns (A, B) by 3 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 1, B = 0; Row 2: A = 2, B = 2; Row 3: A = 4, B = 0. A height of 0 means that grid square is bare table.**

## Question 28

Correct option identified: the stem solid has 6 cubes so the answer needs 7; the options have 7, 4, 9, 5, 10 cubes. **B1**

**Answer: A) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 2 columns (A, B) by 2 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 1, B = 0; Row 2: A = 3, B = 3. A height of 0 means that grid square is bare table.**

## Question 29

Correct option identified (4): Each of the 3 stacks keeps 1 cube: 7 - 3 = 4 to remove. **B1**

**Answer: E) 4**

## Question 30

Correct option identified: the stem solid has 9 cubes so the answer needs 9; the options have 10, 9, 11, 8, 7 cubes. **B1**

**Answer: B) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 3 columns (A, B, C) by 2 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 3, B = 0, C = 0; Row 2: A = 4, B = 1, C = 1. A height of 0 means that grid square is bare table.**

## Question 31

Correct option identified (4): The full box needs 12 cubes and the solid has 8, so 12 - 8 = 4. **B1**

**Answer: E) 4**

## Question 32

Correct option identified: the stem solid has 6 cubes so the answer needs 9; the options have 9, 7, 11, 6, 12 cubes. **B1**

**Answer: A) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 2 columns (A, B) by 3 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 1, B = 0; Row 2: A = 2, B = 0; Row 3: A = 3, B = 3. A height of 0 means that grid square is bare table.**

## Question 33

Correct option identified (5): Count each stack: the heights add up to 5, including the cubes you cannot see. **B1**

**Answer: C) 5**

## Question 34

Correct option identified (3 oe) - the solid uses 5 cubes, so 8 minus 5 leaves 3 cubes needed to complete the box **B1**

**Answer: 3**


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## Question 35

Correct option identified (2): Each of the 3 stacks keeps 1 cube: 5 - 3 = 2 to remove. **B1**

**Answer: C) 2**

## Question 36

Correct option identified: the stem solid has 8 cubes so the answer needs 6; the options have 6, 4, 9, 5, 8 cubes. **B1**

**Answer: A) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 2 columns (A, B) by 3 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 1, B = 1; Row 2: A = 1, B = 1; Row 3: A = 1, B = 1. A height of 0 means that grid square is bare table.**

## Question 37

Correct option identified (1): Each of the 4 stacks keeps 1 cube: 5 - 4 = 1 to remove. **B1**

**Answer: E) 1**

## Question 38

Correct option identified (11): Count each stack: the heights add up to 11, including the cubes you cannot see. **B1**

**Answer: D) 11**

## Question 39

Correct option identified: the stem solid has 5 cubes so the answer needs 5; the options have 6, 7, 4, 5, 3 cubes. **B1**

**Answer: D) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 2 columns (A, B) by 3 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 1, B = 0; Row 2: A = 1, B = 0; Row 3: A = 2, B = 1. A height of 0 means that grid square is bare table.**

## Question 40

Correct option identified (6): The full box needs 12 cubes and the solid has 6, so 12 - 6 = 6. **B1**

**Answer: A) 6**

## Question 41

Correct option identified (5): A cube touches the table in every grid square that is built on: 5 squares. **B1**

**Answer: D) 5**

## Question 42

Correct option identified (10 oe) - the six stack heights sum to 10 **B1**

**Answer: 10**

## Question 43

Correct option identified: the stem solid has 9 cubes so the answer needs 8; the options have 9, 11, 8, 5, 6 cubes. **B1**

**Answer: C) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 3 columns (A, B, C) by 2 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 0, B = 2, C = 0; Row 2: A = 3, B = 2, C = 1. A height of 0 means that grid square is bare table.**

## Question 44

Correct option identified (7): Count each stack: the heights add up to 7, including the cubes you cannot see. **B1**

**Answer: E) 7**

## Question 45

Correct option identified: the stem solid has 10 cubes so the answer needs 10; the options have 9, 10, 11, 8, 12 cubes. **B1**

**Answer: B) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 3 columns (A, B, C) by 2 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 0, B = 2, C = 1; Row 2: A = 3, B = 2, C = 2. A height of 0 means that grid square is bare table.**

## Question 46

Correct option identified (3): Each of the 4 stacks keeps 1 cube: 7 - 4 = 3 to remove. **B1**

**Answer: C) 3**

## Question 47

Correct option identified: the stem solid has 5 cubes so the answer needs 7; the options have 9, 5, 4, 10, 7 cubes. **B1**

**Answer: E) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 2 columns (A, B) by 3 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 1, B = 0; Row 2: A = 2, B = 2; Row 3: A = 2, B = 0. A height of 0 means that grid square is bare table.**

## Question 48

Correct option identified: the stem solid has 8 cubes so the answer needs 9; the options have 8, 7, 11, 9, 10 cubes. **B1**

**Answer: D) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 3 columns (A, B, C) by 2 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 3, B = 0, C = 0; Row 2: A = 3, B = 2, C = 1. A height of 0 means that grid square is bare table.**

## Question 49

Correct option identified (5): Count each stack: the heights add up to 5, including the cubes you cannot see. **B1**

**Answer: A) 5**

## Question 50

Correct option identified: the stem solid has 5 cubes so the answer needs 8; the options have 10, 8, 5, 6, 11 cubes. **B1**

**Answer: B) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 2 columns (A, B) by 2 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 3, B = 1; Row 2: A = 3, B = 1. A height of 0 means that grid square is bare table.**

## Question 51

Correct option identified: the stem solid has 12 cubes so the answer needs 9; the options have 11, 7, 9, 8, 10 cubes. **B1**

**Answer: C) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 2 columns (A, B) by 3 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 2, B = 0; Row 2: A = 2, B = 0; Row 3: A = 3, B = 2. A height of 0 means that grid square is bare table.**


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## Question 52

Correct option identified (1): Each of the 5 stacks keeps 1 cube: 6 - 5 = 1 to remove. **B1**

**Answer: E) 1**

## Question 53

Correct option identified (5): A cube touches the table in every grid square that is built on: 5 squares. **B1**

**Answer: E) 5**

## Question 54

Correct option identified: the stem solid has 8 cubes so the answer needs 9; the options have 11, 12, 6, 8, 9 cubes. **B1**

**Answer: E) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 3 columns (A, B, C) by 2 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 0, B = 1, C = 1; Row 2: A = 4, B = 2, C = 1. A height of 0 means that grid square is bare table.**

## Question 55

Correct option identified (3): Each of the 5 stacks keeps 1 cube: 8 - 5 = 3 to remove. **B1**

**Answer: D) 3**

## Question 56

Correct option identified: the stem solid has 9 cubes so the answer needs 6; the options have 9, 3, 6, 5, 7 cubes. **B1**

**Answer: C) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 3 columns (A, B, C) by 2 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 0, B = 1, C = 1; Row 2: A = 2, B = 1, C = 1. A height of 0 means that grid square is bare table.**

## Question 57

Correct option identified (6): Count each stack: the heights add up to 6, including the cubes you cannot see. **B1**

**Answer: B) 6**

## Question 58

Correct option identified: the stem solid has 9 cubes so the answer needs 9; the options have 9, 6, 10, 8, 12 cubes. **B1**

**Answer: A) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 2 columns (A, B) by 3 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 0, B = 1; Row 2: A = 1, B = 1; Row 3: A = 3, B = 3. A height of 0 means that grid square is bare table.**

## Question 59

Correct option identified (5): A cube touches the table in every grid square that is built on: 5 squares. **B1**

**Answer: D) 5**

## Question 60

Correct option identified: the stem solid has 8 cubes so the answer needs 6; the options have 5, 8, 3, 6, 7 cubes. **B1**

**Answer: D) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 2 columns (A, B) by 3 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 1, B = 0; Row 2: A = 1, B = 0; Row 3: A = 2, B = 2. A height of 0 means that grid square is bare table.**

## Question 61

Correct option identified (4): Count each stack: the heights add up to 4, including the cubes you cannot see. **B1**

**Answer: B) 4**

## Question 62

Correct option identified: the stem solid has 10 cubes so the answer needs 10; the options have 9, 11, 8, 10, 12 cubes. **B1**

**Answer: D) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 3 columns (A, B, C) by 2 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 0, B = 2, C = 0; Row 2: A = 3, B = 3, C = 2. A height of 0 means that grid square is bare table.**

## Question 63

Correct option identified: the stem solid has 7 cubes so the answer needs 7; the options have 7, 9, 4, 5, 10 cubes. **B1**

**Answer: A) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 3 columns (A, B, C) by 2 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 0, B = 2, C = 1; Row 2: A = 2, B = 2, C = 0. A height of 0 means that grid square is bare table.**

## Question 64

Correct option identified (2): The full box needs 8 cubes and the solid has 6, so 8 - 6 = 2. **B1**

**Answer: C) 2**

## Question 65

Correct option identified: the stem solid has 10 cubes so the answer needs 10; the options have 11, 10, 12, 9, 8 cubes. **B1**

**Answer: B) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 2 columns (A, B) by 3 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 0, B = 1; Row 2: A = 2, B = 1; Row 3: A = 3, B = 3. A height of 0 means that grid square is bare table.**

## Question 66

Correct option identified: the stem solid has 7 cubes so the answer needs 6; the options have 3, 9, 4, 8, 6 cubes. **B1**

**Answer: E) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 3 columns (A, B, C) by 2 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 0, B = 1, C = 0; Row 2: A = 2, B = 2, C = 1. A height of 0 means that grid square is bare table.**

## Question 67

Correct option identified (8): Count each stack: the heights add up to 8, including the cubes you cannot see. **B1**

**Answer: C) 8**

## Question 68

Correct option identified (2 oe) - only the bottom two cubes of the centre (B2) stack are surrounded on all four sides and covered from above **B1**

**Answer: 2**


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## Question 69

Correct option identified: the stem solid has 8 cubes so the answer needs 7; the options have 5, 8, 9, 7, 6 cubes. **B1**

**Answer: D) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 3 columns (A, B, C) by 2 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 0, B = 1, C = 1; Row 2: A = 3, B = 1, C = 1. A height of 0 means that grid square is bare table.**

## Question 70

Correct option identified (7): Count each stack: the heights add up to 7, including the cubes you cannot see. **B1**

**Answer: C) 7**

## Question 71

Correct option identified: the stem solid has 8 cubes so the answer needs 7; the options have 9, 5, 8, 4, 7 cubes. **B1**

**Answer: E) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 3 columns (A, B, C) by 2 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 1, B = 0, C = 0; Row 2: A = 3, B = 2, C = 1. A height of 0 means that grid square is bare table.**

## Question 72

Correct option identified (4): A cube touches the table in every grid square that is built on: 4 squares. **B1**

**Answer: D) 4**

## Question 73

Correct option identified (10): Count each stack: the heights add up to 10, including the cubes you cannot see. **B1**

**Answer: A) 10**

## Question 74

Correct option identified: the stem solid has 7 cubes so the answer needs 9; the options have 10, 9, 6, 7, 12 cubes. **B1**

**Answer: B) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 2 columns (A, B) by 3 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 1, B = 0; Row 2: A = 2, B = 2; Row 3: A = 4, B = 0. A height of 0 means that grid square is bare table.**

## Question 75

Correct option identified (4): A cube touches the table in every grid square that is built on: 4 squares. **B1**

**Answer: A) 4**

## Question 76

Correct option identified (4): A cube touches the table in every grid square that is built on: 4 squares. **B1**

**Answer: A) 4**

## Question 77

Correct option identified (18 oe) - each row of stack heights sums to 6, and 6 + 6 + 6 = 18 **B1**

**Answer: 18**

## Question 78

Correct option identified: the stem solid has 9 cubes so the answer needs 8; the options have 11, 10, 7, 8, 5 cubes. **B1**

**Answer: D) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 2 columns (A, B) by 3 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 1, B = 1; Row 2: A = 3, B = 0; Row 3: A = 3, B = 0. A height of 0 means that grid square is bare table.**

## Question 79

Correct option identified: the stem solid has 10 cubes so the answer needs 10; the options have 12, 8, 10, 11, 9 cubes. **B1**

**Answer: C) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 3 columns (A, B, C) by 2 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 1, B = 1, C = 0; Row 2: A = 3, B = 3, C = 2. A height of 0 means that grid square is bare table.**

## Question 80

Correct option identified (9): The full box needs 18 cubes and the solid has 9, so 18 - 9 = 9. **B1**

**Answer: B) 9**

## Question 81

Correct option identified: the stem solid has 6 cubes so the answer needs 6; the options have 6, 4, 8, 3, 9 cubes. **B1**

**Answer: A) a solid built from unit cubes standing on a flat table, isometric view from the front-right-top. Base grid: 2 columns (A, B) by 2 rows (row 1 nearest the viewer). Stack heights - Row 1: A = 1, B = 1; Row 2: A = 2, B = 2. A height of 0 means that grid square is bare table.**

## Question 82

Correct option identified (1): 1 of the 6 cubes have no face showing. **B1**

**Answer: D) 1**


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