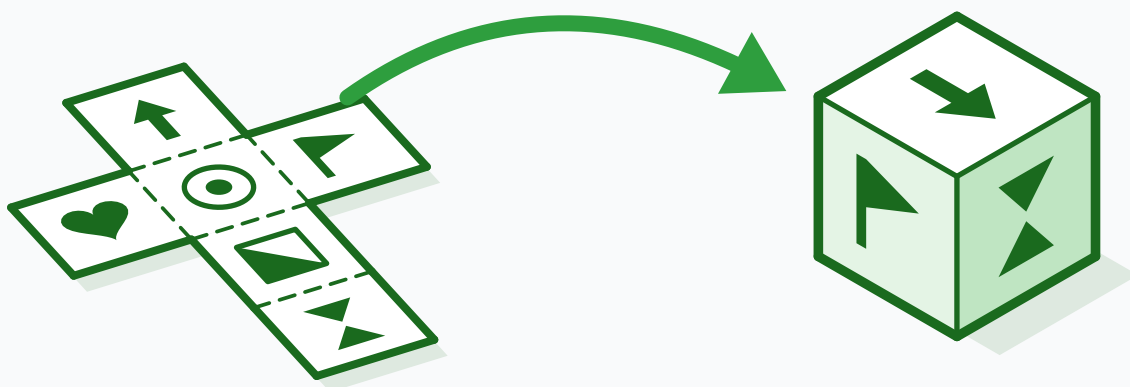


3D Spatial Reasoning

Book 2: Advanced**240 practice questions**
with full explanations**Worked
examples****Full
explanations****Two timed
mixed tests****Five options,
A to E, in
every question**

Cube nets • Views of 3D shapes • Turning 3D shapes • Paper folding

Biggie Ganyo



Every question. One true answer.

3D Spatial Reasoning

Book 2: Advanced

Free sample

40 questions from the book, 10 of each kind, with answers and full explanations
For ages 10 to 12

The full book has 240 questions, with two timed tests: getunatum.com

Biggie Ganyo

getunatum.com

© 2026 Biggie Ganyo. This free sample may be printed and shared, unchanged and free of charge.
Not affiliated with, or endorsed by, any 11+ test provider or exam board.

In this sample

These pages come from 3D Spatial Reasoning, Book 2: Advanced. Each of its four sections starts here as it does in the book, with what to do, three tips and two worked examples, followed by its first 10 questions. The question numbers are the book's own.

Work through a set, then mark it with the quick answer key on page 21. The answers and explanations, from page 22, say why the right answer is right and why each of the others is wrong.

Every question has exactly one right answer.

Before printing, each question was checked by computer, twice, by two methods written independently. A question was used only if both methods found exactly one correct option and the drawing itself settled the answer. Page 27 explains the checks.

Section 1: Cube nets (questions 1 to 10)	4
Section 2: Views of 3D shapes (questions 51 to 60)	8
Section 3: Turning 3D shapes (questions 101 to 110)	12
Section 4: Paper folding (questions 151 to 160)	16
Quick answer key	21
Answers and explanations	22
How every answer was checked	27
The full book	28

How to read the drawings

Every drawing in this book follows the same few rules. Learn them once, and every question reads the same way.

The six patterns



arrow

points one way



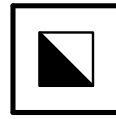
flag

points one way



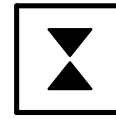
heart

points one way



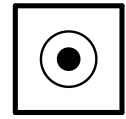
half-shaded square

points one way



hourglass

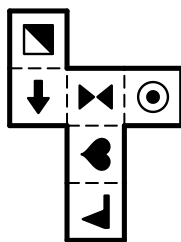
same upside down



target

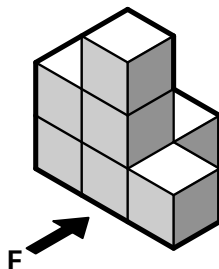
same every way

A pattern that points one way shows how its face is turned, so check its direction as well as its place. On a cube a pattern turns with its face, but it is never flipped over.



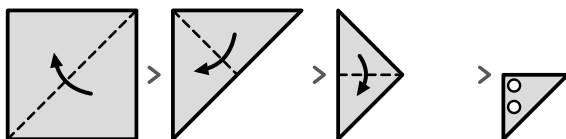
Nets

The bold line is the outside edge. The dashed lines are the folds. The net folds up with the patterns on the outside.



Shapes made of cubes

Every cube is lit from the same side: top faces white, left faces light grey, right faces dark grey, so the shading never gives an answer away. Arrow F marks the front and arrow S the side. Every cube sits on the table or on another cube, and some may be hidden behind others.



Paper folding

The grey square is the paper. The dashed line is the fold, and the curved arrow shows which part folds over. The white circles are the holes, punched through every layer.



Answers

Every question has five options, A to E, and exactly one right answer. Write its letter in the answer box at the end of the question.

SECTION 1

Cube nets

What to do

Each net folds up to make a cube, with the patterns on the outside. Find the one cube, out of five, that the net could make. Most patterns in this book point one way, so check which way each one points as well as where it is. From Set 4 the question turns round: four cubes can be made, and you find the one that cannot.

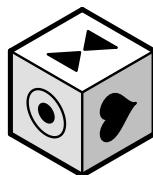
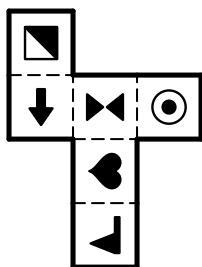
How to solve it

1. Rule out by opposite faces first. Two squares in a line on the net, with one square between them, end up opposite each other and can never be seen at the same time.
2. Then check directions. Choose a pattern that points one way, such as the arrow or the flag. Fold its neighbours up around it in your head, and see which way it must point along the edge they share.
3. Watch for the two commonest traps: a pattern turned a quarter turn, and three faces in mirror-image order around a corner. In the NOT questions, test every cube the same way: the one that breaks a rule is the answer.

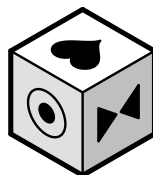
Worked example 1

Ex. This net folds to make a cube, with the patterns on the outside. Which cube could it make?

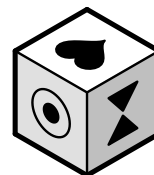
B



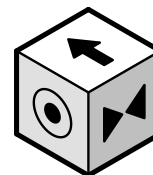
A



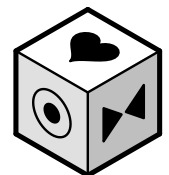
B



C



D



E

Answer B. The hourglass, heart and target meet at one corner of the folded cube in this order.

A is wrong: these faces are next to each other on the cube, but in mirror-image order.

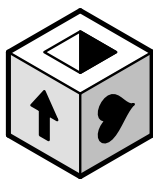
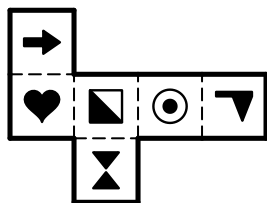
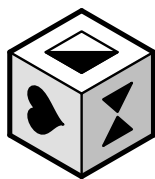
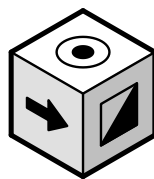
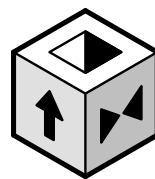
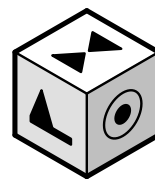
C is wrong: the hourglass is turned the wrong way.

D is wrong: the arrow and the target are on opposite faces, so they cannot be seen together.

E is wrong: the heart is turned the wrong way.

Worked example 2

Ex. This net folds to make a cube, with the patterns on the outside. Which cube could it NOT make?

D**A****B****C****(D)****E**

Answer D. The hourglass and the arrow are on opposite faces, so they cannot be seen together.

A is wrong: this cube can be made, with the heart, half-shaded square and arrow meeting at one corner in this order.

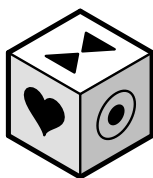
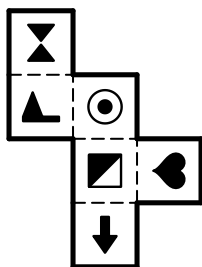
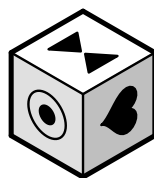
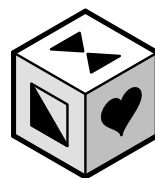
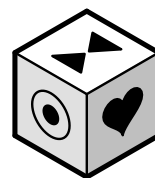
B is wrong: this cube can be made, with the hourglass, half-shaded square and heart meeting at one corner in this order.

C is wrong: this cube can be made, with the half-shaded square, target and arrow meeting at one corner in this order.

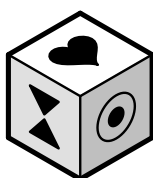
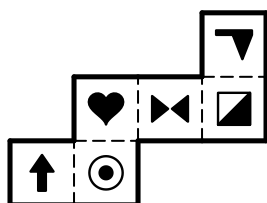
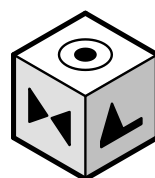
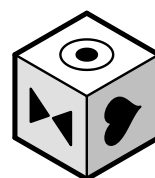
E is wrong: this cube can be made, with the target, hourglass and flag meeting at one corner in this order.

Set 1 · Questions 1 to 10

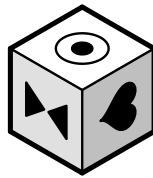
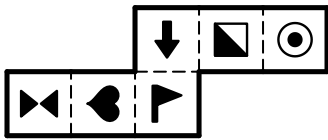
1 This net folds to make a cube, with the patterns on the outside. Which cube could it make?

**A****B****C****D****E**

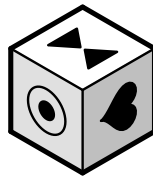
2 This net folds to make a cube, with the patterns on the outside. Which cube could it make?

**A****B****C****D****E**

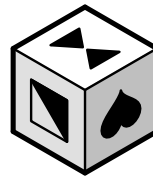
- 3 This net folds to make a cube, with the patterns on the outside. Which cube could it make?

☐


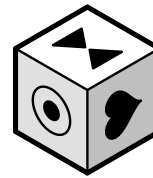
A



B



C

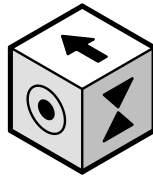
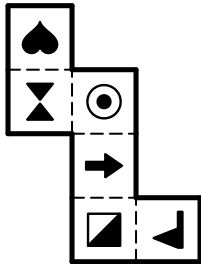


D

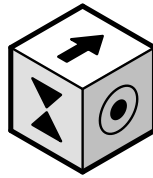


E

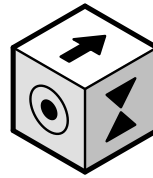
- 4 This net folds to make a cube, with the patterns on the outside. Which cube could it make?

☐


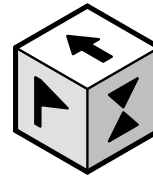
A



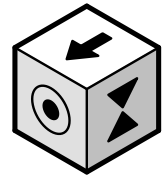
B



C

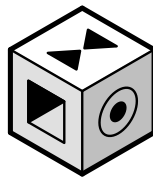
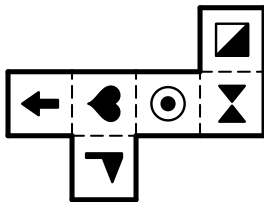


D

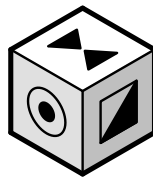


E

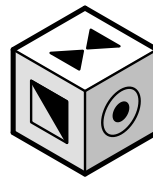
- 5 This net folds to make a cube, with the patterns on the outside. Which cube could it make?

☐


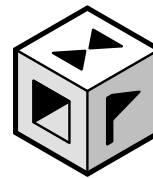
A



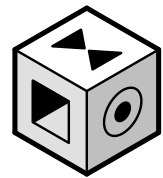
B



C

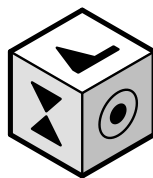
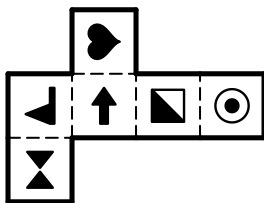


D

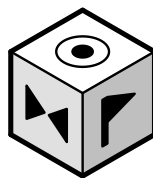


E

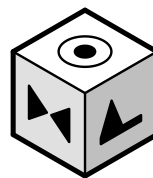
- 6 This net folds to make a cube, with the patterns on the outside. Which cube could it make?

☐


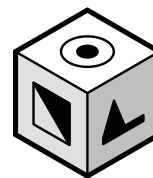
A



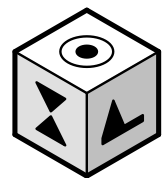
B



C

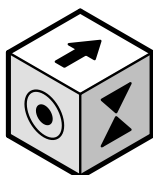
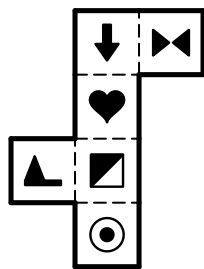


D

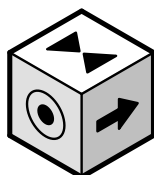


E

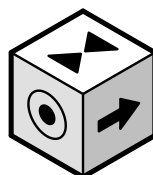
- 7 This net folds to make a cube, with the patterns on the outside. Which cube could it make?



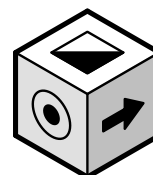
A



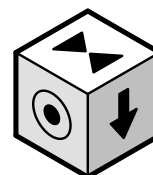
B



C

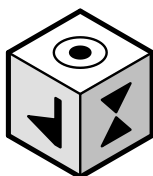
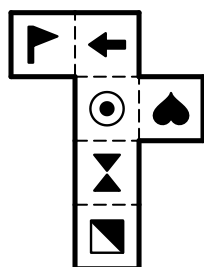


D

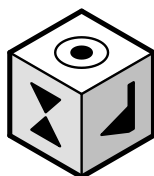


E

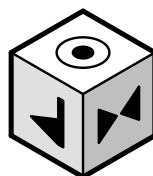
- 8 This net folds to make a cube, with the patterns on the outside. Which cube could it make?



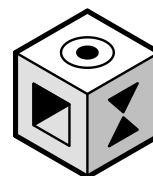
A



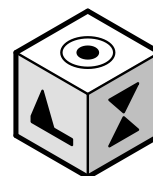
B



C

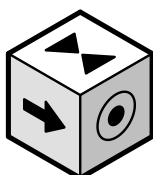
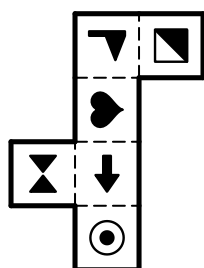


D

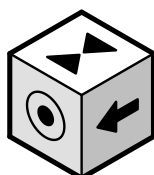


E

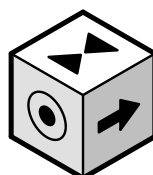
- 9 This net folds to make a cube, with the patterns on the outside. Which cube could it make?



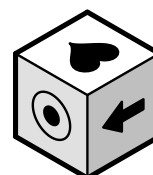
A



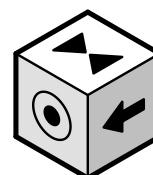
B



C

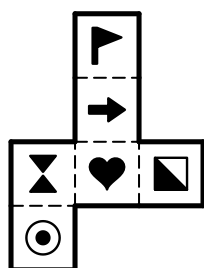


D

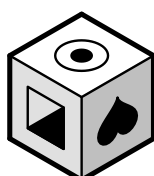


E

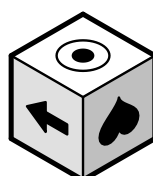
- 10 This net folds to make a cube, with the patterns on the outside. Which cube could it make?



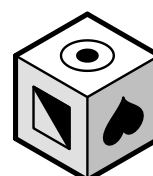
A



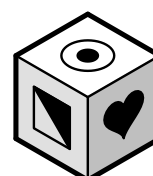
B



C



D



E

Score: _____ out of 10

SECTION 2

Views of 3D shapes

What to do

Each shape is made of the number of cubes stated, and every cube sits on the table or on top of another cube. Some cubes may be hidden, but the number of cubes tells you where they must be. Arrow F marks the front and arrow S the side. Find the view asked for.

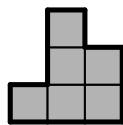
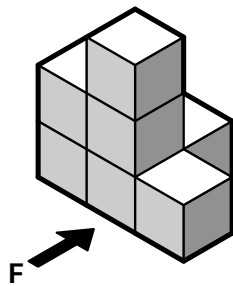
How to solve it

1. Count first. Add up the cubes you can see. If there are fewer than the number stated, the rest are hidden, and the only places they can be are under or behind cubes you can see.
2. View from the side: look along arrow S. Each column of squares is as tall as the tallest stack in that line, from the near side to the far side.
3. Keep left and right the right way round. Imagine standing where the arrow starts and looking along it: what is on your left stays on your left.

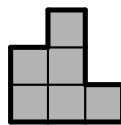
Worked example 1

Ex. This shape is made of 7 cubes. Every cube sits on the table or on another cube. Which is the view from the front, looking in the direction of arrow F?

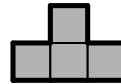
B



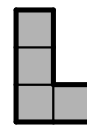
A



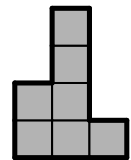
(B)



C



D



E

Answer B. This is the view from the front.

A is wrong: this is the right view reversed, left to right.

C is wrong: this is the view from above.

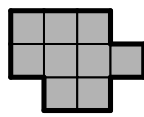
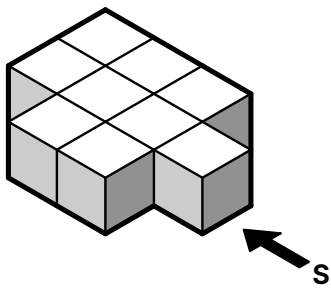
D is wrong: this is the view from the side.

E is wrong: this has a square too many.

Worked example 2

Ex. This shape is made of 9 cubes. Every cube sits on the table or on another cube. Which is the view from the side, looking in the direction of arrow S?

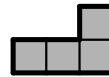
D



A



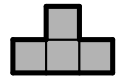
B



C



D



E

Answer D. This is the view from the side.

A is wrong: this is the view from above.

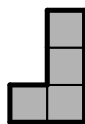
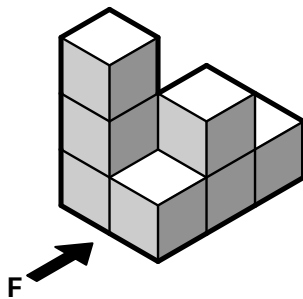
B is wrong: this is the view from the front.

C is wrong: this has a square too many.

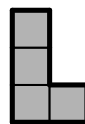
E is wrong: this has a square too many.

Set 1 · Questions 51 to 60

51 This shape is made of 7 cubes. Every cube sits on the table or on another cube. Which is the view from above? (The front, marked F, is at the bottom.)



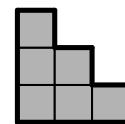
A



B



C

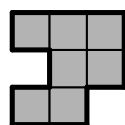
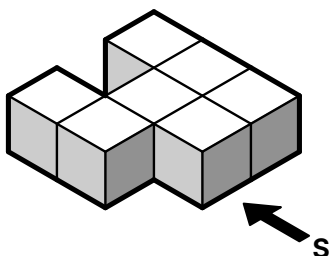


D



E

52 This shape is made of 7 cubes. Every cube sits on the table or on another cube. Which is the view from the side, looking in the direction of arrow S?



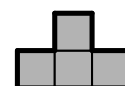
A



B



C

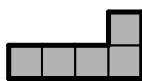
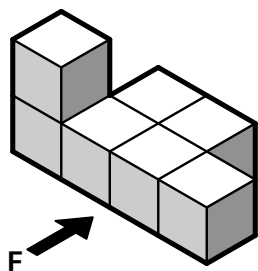


D

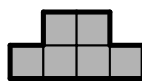


E

- 53** This shape is made of 7 cubes. Every cube sits on the table or on another cube. Which is the view from the front, looking in the direction of arrow F?



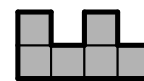
A



B



C

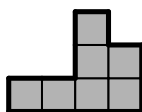
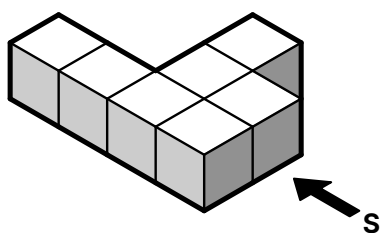


D



E

- 54** This shape is made of 7 cubes. Every cube sits on the table or on another cube. Which is the view from the side, looking in the direction of arrow S?



A



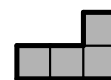
B



C

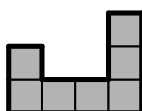
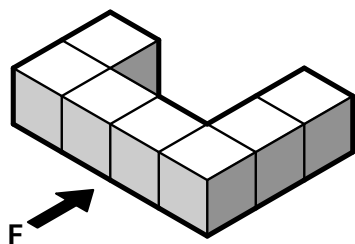


D



E

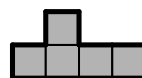
- 55** This shape is made of 7 cubes. Every cube sits on the table or on another cube. Which is the view from the front, looking in the direction of arrow F?



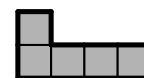
A



B



C

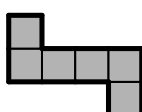
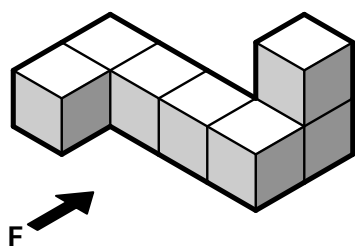


D

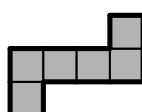


E

- 56** This shape is made of 7 cubes. Every cube sits on the table or on another cube. Which is the view from above? (The front, marked F, is at the bottom.)



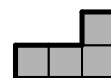
A



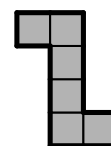
B



C

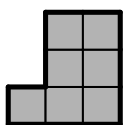
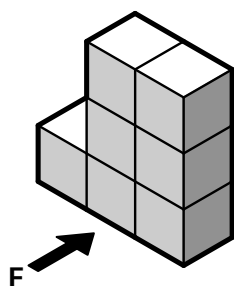


D



E

- 57** This shape is made of 7 cubes. Every cube sits on the table or on another cube. Which is the view from above? (The front, marked F, is at the bottom.)



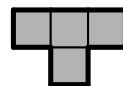
A



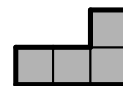
B



C

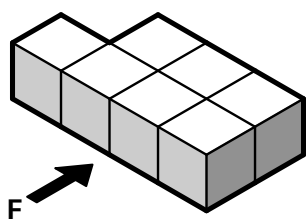


D



E

- 58** This shape is made of 7 cubes. Every cube sits on the table or on another cube. Which is the view from the front, looking in the direction of arrow F?



A



B



C

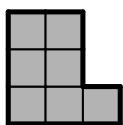
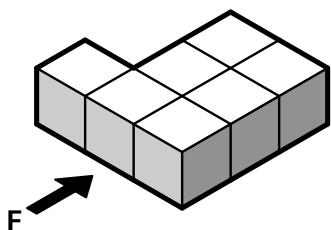


D



E

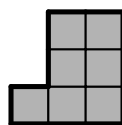
- 59** This shape is made of 7 cubes. Every cube sits on the table or on another cube. Which is the view from above? (The front, marked F, is at the bottom.)



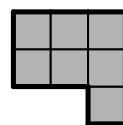
A



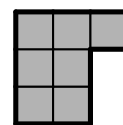
B



C

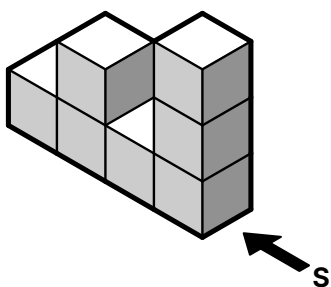


D



E

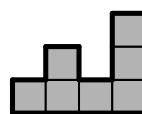
- 60** This shape is made of 7 cubes. Every cube sits on the table or on another cube. Which is the view from the side, looking in the direction of arrow S?



A



B



C



D



E

Score: _____ out of 10

SECTION 3

Turning 3D shapes

What to do

All the shapes are made of 6 cubes joined face to face. Find the one option that is the first shape turned around. A mirror image does not count.

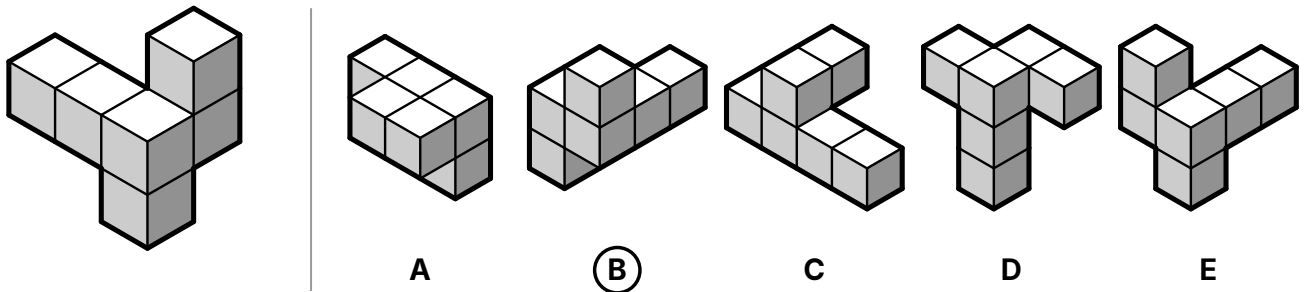
How to solve it

1. Pick a part that stands out, such as the longest arm or a cube that sticks up, and track it in each option.
2. Count the cubes in each arm. Turning a shape never changes these counts, so an option that differs is wrong.
3. Then test for a mirror image. Hold the longest arm still and ask which way the next arm turns, left or right. A mirror image turns the other way, and no turn can make it match.

Worked example 1

Ex. Which shape is the first shape turned around? All the shapes are made of 6 cubes joined face to face.

B



Answer B. This is the first shape, turned.

A is wrong: this is a different shape: its cubes are not arranged the same way.

C is wrong: this is a different shape: its cubes are not arranged the same way.

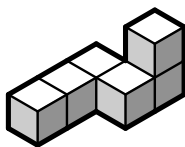
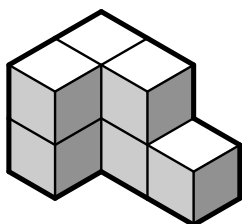
D is wrong: this is a mirror image of the first shape. No turn can make it match.

E is wrong: this is a mirror image of the first shape. No turn can make it match.

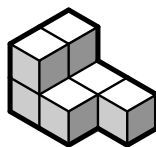
Worked example 2

Ex. Which shape is the first shape turned around? All the shapes are made of 6 cubes joined face to face.

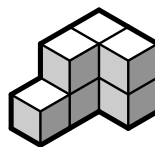
D



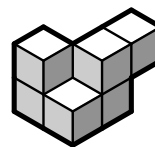
A



B



C



D



E

Answer D. This is the first shape, turned.

A is wrong: this is a different shape: its cubes are not arranged the same way.

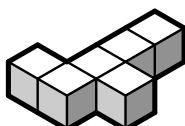
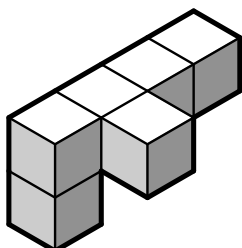
B is wrong: this is a mirror image of the first shape. No turn can make it match.

C is wrong: this is a mirror image of the first shape. No turn can make it match.

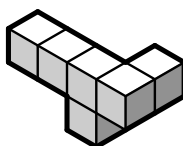
E is wrong: this is a different shape: its cubes are not arranged the same way.

Set 1 · Questions 101 to 110

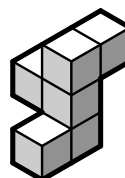
101 Which shape is the first shape turned around? All the shapes are made of 6 cubes joined face to face.



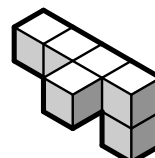
A



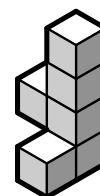
B



C

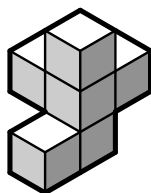
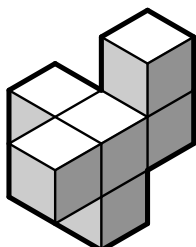


D

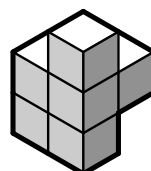


E

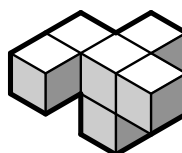
102 Which shape is the first shape turned around? All the shapes are made of 6 cubes joined face to face.



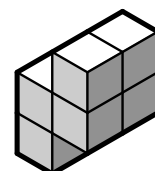
A



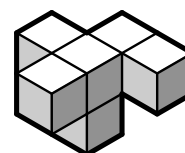
B



C

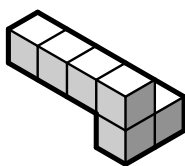
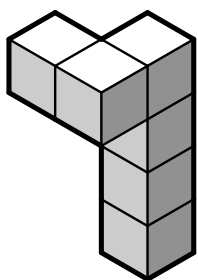


D

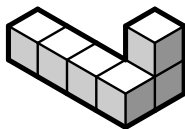


E

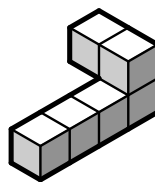
- 103** Which shape is the first shape turned around? All the shapes are made of 6 cubes joined face to face.



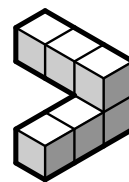
A



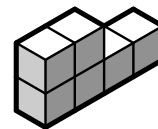
B



C

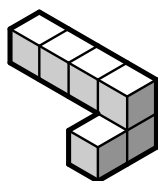
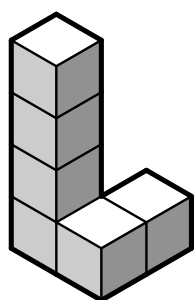


D

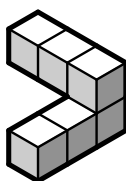


E

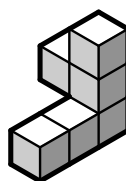
- 104** Which shape is the first shape turned around? All the shapes are made of 6 cubes joined face to face.



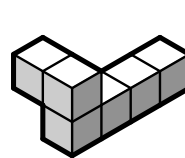
A



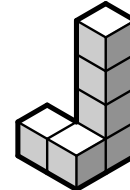
B



C

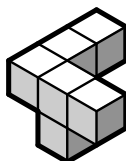
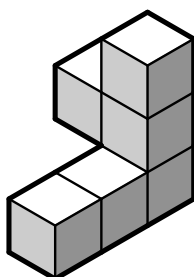


D

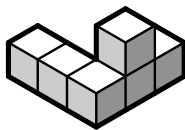


E

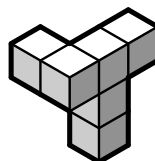
- 105** Which shape is the first shape turned around? All the shapes are made of 6 cubes joined face to face.



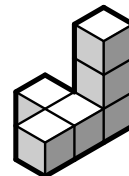
A



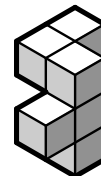
B



C

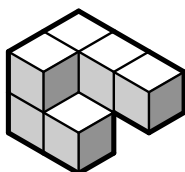
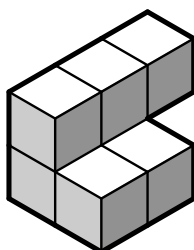


D

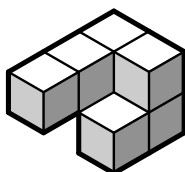


E

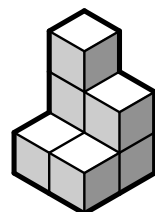
- 106** Which shape is the first shape turned around? All the shapes are made of 6 cubes joined face to face.



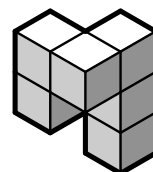
A



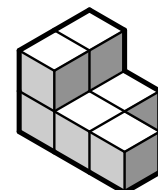
B



C

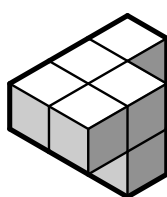
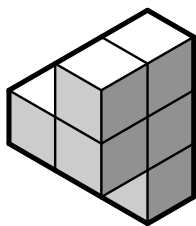


D

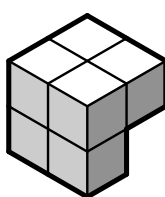


E

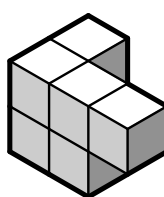
- 107** Which shape is the first shape turned around? All the shapes are made of 6 cubes joined face to face.



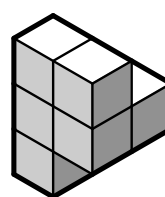
A



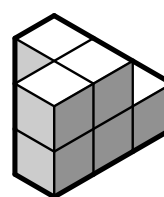
B



C

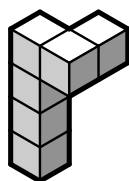
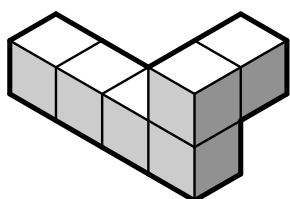


D

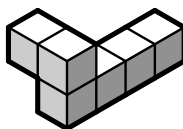


E

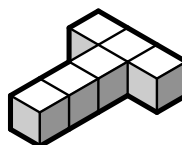
- 108** Which shape is the first shape turned around? All the shapes are made of 6 cubes joined face to face.



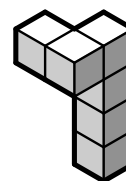
A



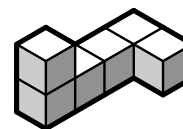
B



C

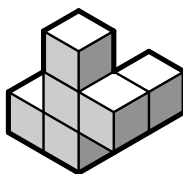
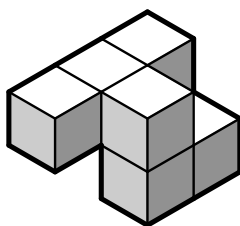


D

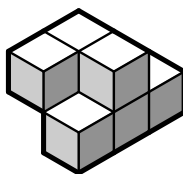


E

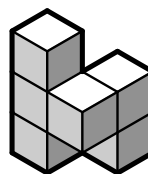
- 109** Which shape is the first shape turned around? All the shapes are made of 6 cubes joined face to face.



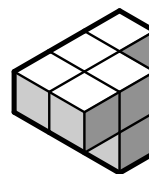
A



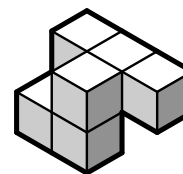
B



C

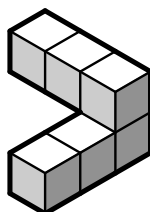
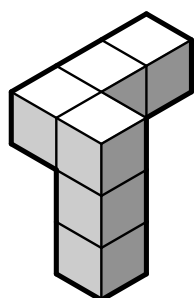


D

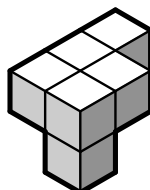


E

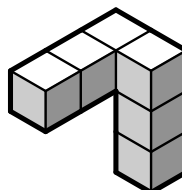
- 110** Which shape is the first shape turned around? All the shapes are made of 6 cubes joined face to face.



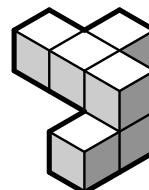
A



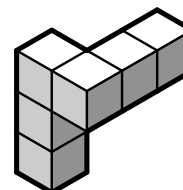
B



C



D



E

Score: _____ out of 10

SECTION 4

Paper folding

What to do

A square of paper is folded two or three times as shown, then two holes are punched through all the layers. Find the paper as it looks when it is opened out flat.

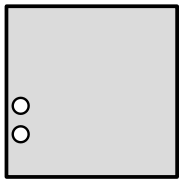
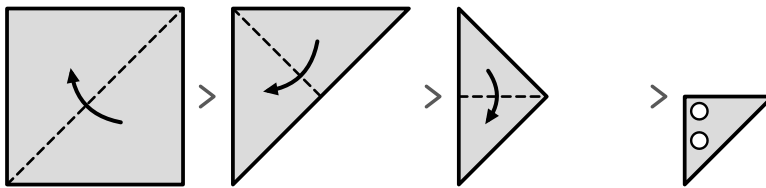
How to solve it

1. Open the folds in reverse order, starting with the last one.
2. Each time you open a fold, every hole is copied across the fold line, the same distance from it on the other side.
3. Count the holes. Two holes through 4 layers make 8 holes; through 8 layers they make 16.

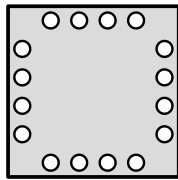
Worked example 1

Ex. A square of paper is folded three times as shown, then two holes are punched through all the layers. Which shows the paper when it is opened out?

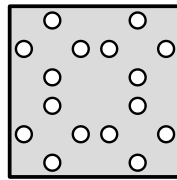
B



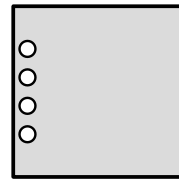
A



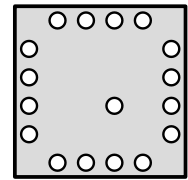
(B)



C



D



E

Answer B. The punch goes through 8 layers, so the open sheet has 16 holes in this pattern.

A is wrong: this shows only where the punch went in, before any fold is opened.

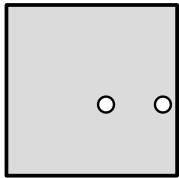
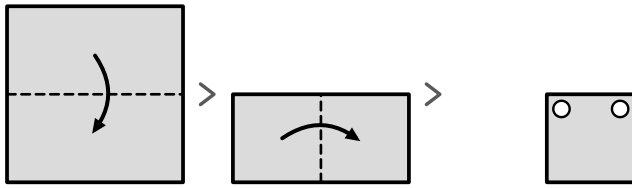
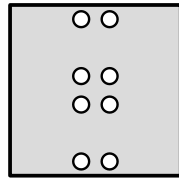
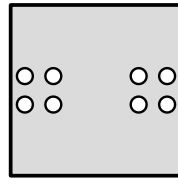
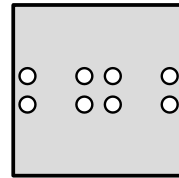
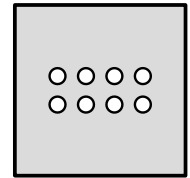
C is wrong: this is what a punch in a different place would give.

D is wrong: this shows the paper with only 1 of the 3 folds opened out.

E is wrong: this has 17 holes, but the punch goes through 8 layers, making 16 holes.

Worked example 2

Ex. A square of paper is folded twice as shown, then two holes are punched through all the layers. Which shows the paper when it is opened out?

D**A****B****C****(D)****E**

Answer D. The punch goes through 4 layers, so the open sheet has 8 holes in this pattern.

A is wrong: this shows only where the punch went in, before any fold is opened.

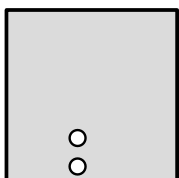
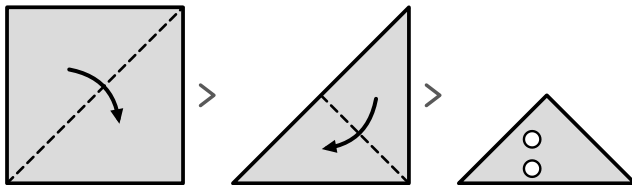
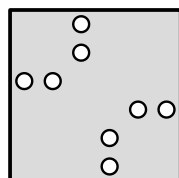
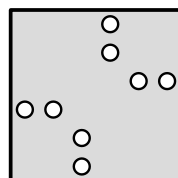
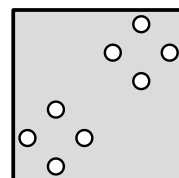
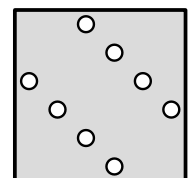
B is wrong: this is the right pattern turned round.

C is wrong: this is what a punch in a different place would give.

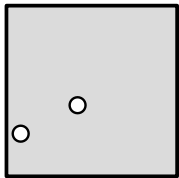
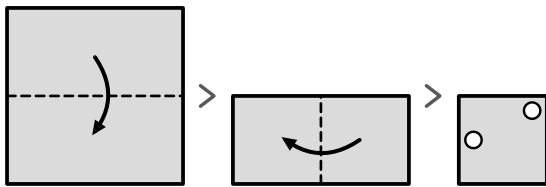
E is wrong: this is what a punch in a different place would give.

Set 1 · Questions 151 to 160

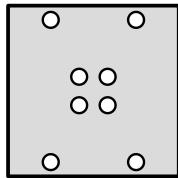
151 A square of paper is folded twice as shown, then two holes are punched through all the layers. Which shows the paper when it is opened out?

**A****B****C****D****E**

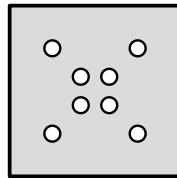
- 152** A square of paper is folded twice as shown, then two holes are punched through all the layers. Which shows the paper when it is opened out?



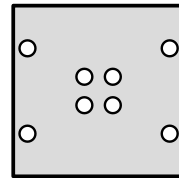
A



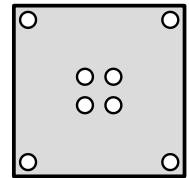
B



C

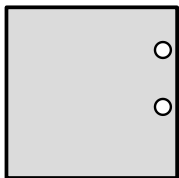
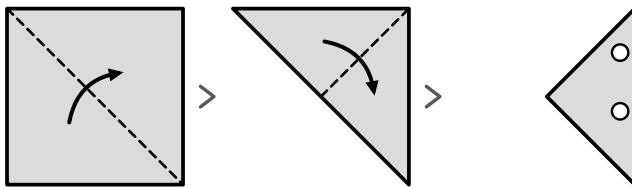


D

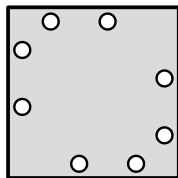


E

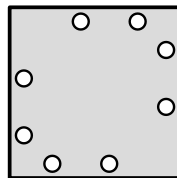
- 153** A square of paper is folded twice as shown, then two holes are punched through all the layers. Which shows the paper when it is opened out?



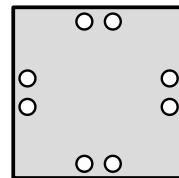
A



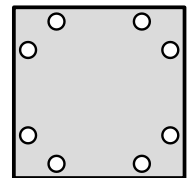
B



C

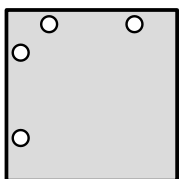
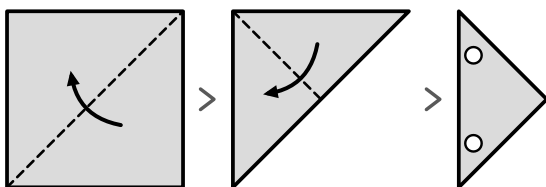


D

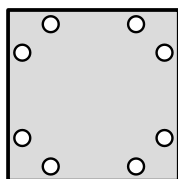


E

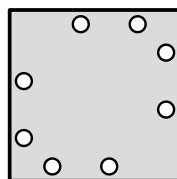
- 154** A square of paper is folded twice as shown, then two holes are punched through all the layers. Which shows the paper when it is opened out?



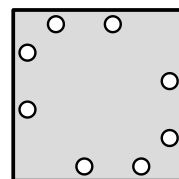
A



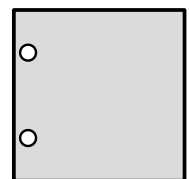
B



C

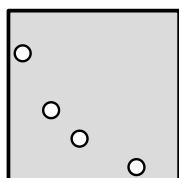
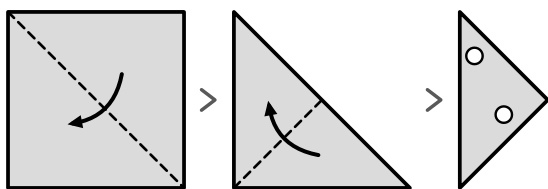
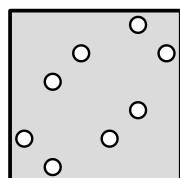
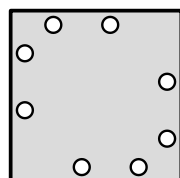
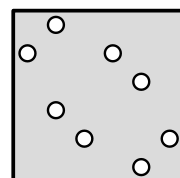
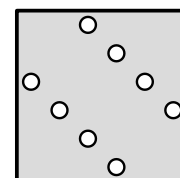


D

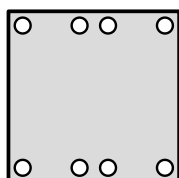
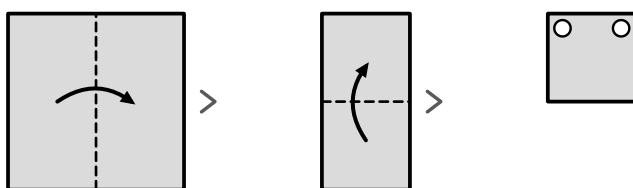
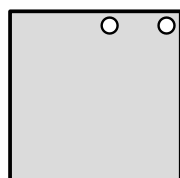
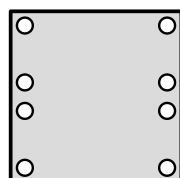
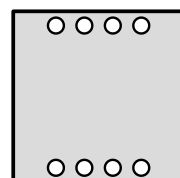
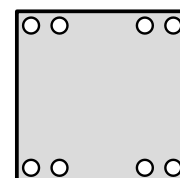


E

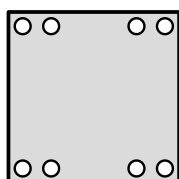
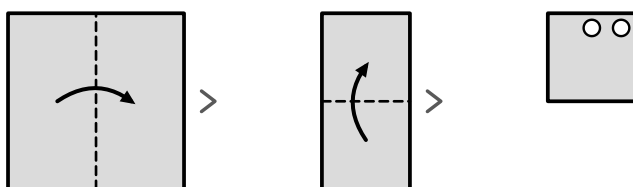
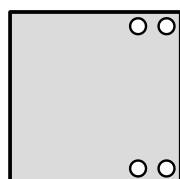
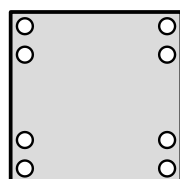
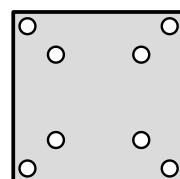
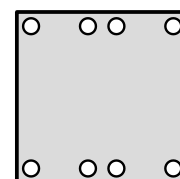
- 155** A square of paper is folded twice as shown, then two holes are punched through all the layers. Which shows the paper when it is opened out?

**A****B****C****D****E**

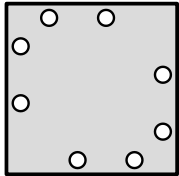
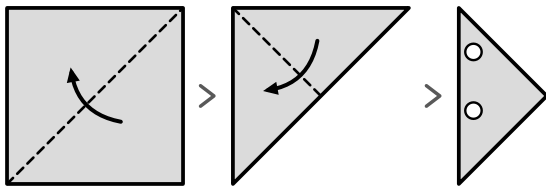
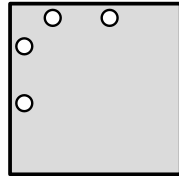
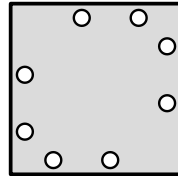
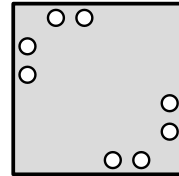
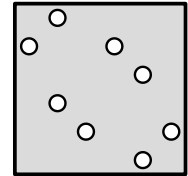
- 156** A square of paper is folded twice as shown, then two holes are punched through all the layers. Which shows the paper when it is opened out?

**A****B****C****D****E**

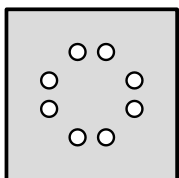
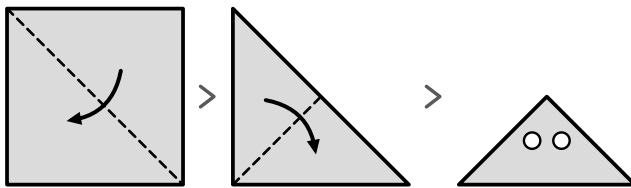
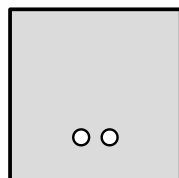
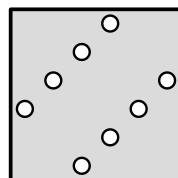
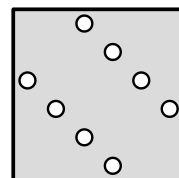
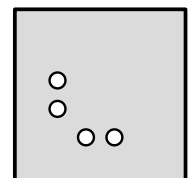
- 157** A square of paper is folded twice as shown, then two holes are punched through all the layers. Which shows the paper when it is opened out?

**A****B****C****D****E**

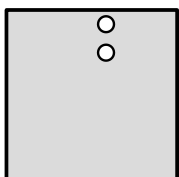
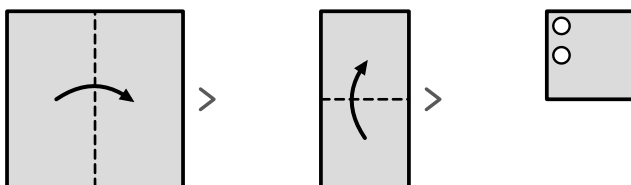
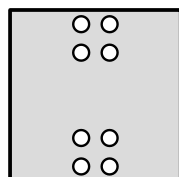
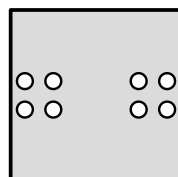
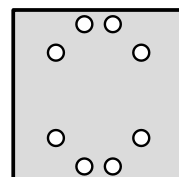
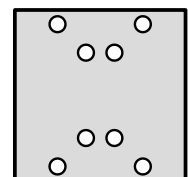
- 158** A square of paper is folded twice as shown, then two holes are punched through all the layers. Which shows the paper when it is opened out?

**A****B****C****D****E**

- 159** A square of paper is folded twice as shown, then two holes are punched through all the layers. Which shows the paper when it is opened out?

**A****B****C****D****E**

- 160** A square of paper is folded twice as shown, then two holes are punched through all the layers. Which shows the paper when it is opened out?

**A****B****C****D****E**

Score: _____ out of 10

Quick answer key

The letter of the right answer to every question, for quick marking. Each row is one set of 10 questions. Why each answer is right, and why the others are wrong, is explained from page 22.

Section 1: Cube nets

Set 1	1	B	2	B	3	E	4	A	5	A	6	C	7	B	8	A	9	B	10	D
-------	---	----------	---	----------	---	----------	---	----------	---	----------	---	----------	---	----------	---	----------	---	----------	----	----------

Section 2: Views of 3D shapes

Set 1	51	A	52	E	53	E	54	D	55	E	56	B	57	C	58	A	59	C	60	B
-------	----	----------	----	----------	----	----------	----	----------	----	----------	----	----------	----	----------	----	----------	----	----------	----	----------

Section 3: Turning 3D shapes

Set 1	101	E	102	C	103	C	104	A	105	A	106	B	107	A	108	D	109	B	110	A
-------	-----	----------	-----	----------	-----	----------	-----	----------	-----	----------	-----	----------	-----	----------	-----	----------	-----	----------	-----	----------

Section 4: Paper folding

Set 1	151	C	152	D	153	C	154	B	155	D	156	A	157	A	158	A	159	A	160	B
-------	-----	----------	-----	----------	-----	----------	-----	----------	-----	----------	-----	----------	-----	----------	-----	----------	-----	----------	-----	----------

Answers and explanations

Section 1: Cube nets

- 1 B The heart, hourglass and target meet at one corner of the folded cube in this order.**
 A: These faces are next to each other on the cube, but in mirror-image order.
 C: The heart is turned the wrong way.
 D: The hourglass and the half-shaded square are on opposite faces, so they cannot be seen together.
 E: The hourglass is turned the wrong way.
- 2 B The heart, target and hourglass meet at one corner of the folded cube in this order.**
 A: These faces are next to each other on the cube, but in mirror-image order.
 C: The hourglass is turned the wrong way.
 D: The flag and the target are on opposite faces, so they cannot be seen together.
 E: The heart is turned the wrong way.
- 3 E The heart, hourglass and target meet at one corner of the folded cube in this order.**
 A: These faces are next to each other on the cube, but in mirror-image order.
 B: The heart is turned the wrong way.
 C: The heart and the half-shaded square are on opposite faces, so they cannot be seen together.
 D: The heart is turned the wrong way.
- 4 A The hourglass, arrow and target meet at one corner of the folded cube in this order.**
 B: These faces are next to each other on the cube, but in mirror-image order.
 C: The arrow is turned the wrong way.
 D: The hourglass and the flag are on opposite faces, so they cannot be seen together.
 E: The arrow is turned the wrong way.
- 5 A The target, hourglass and half-shaded square meet at one corner of the folded cube in this order.**
 B: These faces are next to each other on the cube, but in mirror-image order.
 C: The half-shaded square is turned the wrong way.
 D: The flag and the half-shaded square are on opposite faces, so they cannot be seen together.
 E: The hourglass is turned the wrong way.
- 6 C The flag, target and hourglass meet at one corner of the folded cube in this order.**
 A: These faces are next to each other on the cube, but in mirror-image order.
 B: The flag is turned the wrong way.
 D: The flag and the half-shaded square are on opposite faces, so they cannot be seen together.
 E: The hourglass is turned the wrong way.
- 7 B The arrow, hourglass and target meet at one corner of the folded cube in this order.**
 A: These faces are next to each other on the cube, but in mirror-image order.
 C: The hourglass is turned the wrong way.
 D: The arrow and the half-shaded square are on opposite faces, so they cannot be seen together.
 E: The arrow is turned the wrong way.
- 8 A The hourglass, target and flag meet at one corner of the folded cube in this order.**
 B: These faces are next to each other on the cube, but in mirror-image order.
 C: The hourglass is turned the wrong way.
 D: The target and the half-shaded square are on opposite faces, so they cannot be seen together.
 E: The flag is turned the wrong way.
- 9 B The arrow, hourglass and target meet at one corner of the folded cube in this order.**
 A: These faces are next to each other on the cube, but in mirror-image order.
 C: The arrow is turned the wrong way.
 D: The heart and the target are on opposite faces, so they cannot be seen together.
 E: The hourglass is turned the wrong way.

10 D The heart, target and half-shaded square meet at one corner of the folded cube in this order.

A: These faces are next to each other on the cube, but in mirror-image order.

B: The half-shaded square is turned the wrong way.

C: The target and the arrow are on opposite faces, so they cannot be seen together.

E: The heart is turned the wrong way.

Section 2: Views of 3D shapes

51 A This is the view from above.

B: This is the right view reversed, left to right.

C: This is the view from the front.

D: This is the view from the side.

E: This is the right view turned round.

52 E This is the view from the side.

A: This is the view from above.

B: This has a square too many.

C: This is missing a square.

D: This has a square too many.

53 E This is the view from the front.

A: This is the right view reversed, left to right.

B: This is the view from above.

C: This is the view from the side.

D: This has a square too many.

54 D This is the view from the side.

A: This is the view from above.

B: This is the view from the front.

C: This is missing a square.

E: This has a square too many.

55 E This is the view from the front.

A: This is the view from above.

B: This is the view from the side.

C: This has a square too many.

D: This has a square too many.

56 B This is the view from above.

A: This is the right view reversed, left to right.

C: This is the view from the front.

D: This is the view from the side.

E: This is the right view turned round.

57 C This is the view from above.

A: This is the view from the front.

B: This is the view from the side.

D: This has a square too many.

E: This has a square too many.

58 A This is the view from the front.

B: This is the view from above.

C: This is the view from the side.

D: This has a square too many.

E: This has a square too many.

59 C This is the view from above.

A: This is the right view reversed, left to right.

B: This is the view from the front.

D: This is the right view turned round.

E: This is the right view turned round.

60 B This is the view from the side.

- A: This is the view from above.
 C: This is the view from the front.
 D: This has a square too many.
 E: This is missing a square.

Section 3: Turning 3D shapes

101 E This is the first shape, turned.

- A: This is a different shape: its cubes are not arranged the same way.
 B: This is a mirror image of the first shape. No turn can make it match.
 C: This is a different shape: its cubes are not arranged the same way.
 D: This is a mirror image of the first shape. No turn can make it match.

102 C This is the first shape, turned.

- A: This is a mirror image of the first shape. No turn can make it match.
 B: This is a different shape: its cubes are not arranged the same way.
 D: This is a different shape: its cubes are not arranged the same way.
 E: This is a mirror image of the first shape. No turn can make it match.

103 C This is the first shape, turned.

- A: This is a mirror image of the first shape. No turn can make it match.
 B: This is a mirror image of the first shape. No turn can make it match.
 D: This is a different shape: its cubes are not arranged the same way.
 E: This is a different shape: its cubes are not arranged the same way.

104 A This is the first shape, turned.

- B: This is a different shape: its cubes are not arranged the same way.
 C: This is a different shape: its cubes are not arranged the same way.
 D: This is a mirror image of the first shape. No turn can make it match.
 E: This is a mirror image of the first shape. No turn can make it match.

105 A This is the first shape, turned.

- B: This is a mirror image of the first shape. No turn can make it match.
 C: This is a different shape: its cubes are not arranged the same way.
 D: This is a mirror image of the first shape. No turn can make it match.
 E: This is a different shape: its cubes are not arranged the same way.

106 B This is the first shape, turned.

- A: This is a mirror image of the first shape. No turn can make it match.
 C: This is a different shape: its cubes are not arranged the same way.
 D: This is a mirror image of the first shape. No turn can make it match.
 E: This is a different shape: its cubes are not arranged the same way.

107 A This is the first shape, turned.

- B: This is a different shape: its cubes are not arranged the same way.
 C: This is a different shape: its cubes are not arranged the same way.
 D: This is a mirror image of the first shape. No turn can make it match.
 E: This is a mirror image of the first shape. No turn can make it match.

108 D This is the first shape, turned.

- A: This is a mirror image of the first shape. No turn can make it match.
 B: This is a mirror image of the first shape. No turn can make it match.
 C: This is a different shape: its cubes are not arranged the same way.
 E: This is a different shape: its cubes are not arranged the same way.

109 B This is the first shape, turned.

- A: This is a different shape: its cubes are not arranged the same way.
 C: This is a mirror image of the first shape. No turn can make it match.
 D: This is a different shape: its cubes are not arranged the same way.
 E: This is a mirror image of the first shape. No turn can make it match.

110 A This is the first shape, turned.

- B: This is a different shape: its cubes are not arranged the same way.
 C: This is a mirror image of the first shape. No turn can make it match.
 D: This is a different shape: its cubes are not arranged the same way.
 E: This is a mirror image of the first shape. No turn can make it match.

Section 4: Paper folding

151 C The punch goes through 4 layers, so the open sheet has 8 holes in this pattern.

- A: This shows only where the punch went in, before any fold is opened.
 B: This is the right pattern reflected.
 D: This is what a punch in a different place would give.
 E: This is what a punch in a different place would give.

152 D The punch goes through 4 layers, so the open sheet has 8 holes in this pattern.

- A: This shows only where the punch went in, before any fold is opened.
 B: This is the right pattern turned round.
 C: This is what a punch in a different place would give.
 E: This is what a punch in a different place would give.

153 C The punch goes through 4 layers, so the open sheet has 8 holes in this pattern.

- A: This shows only where the punch went in, before any fold is opened.
 B: This is the right pattern reflected.
 D: This is what a punch in a different place would give.
 E: This is what a punch in a different place would give.

154 B The punch goes through 4 layers, so the open sheet has 8 holes in this pattern.

- A: This shows the paper with only 1 of the 2 folds opened out.
 C: This is what a punch in a different place would give.
 D: This is what a punch in a different place would give.
 E: This shows only where the punch went in, before any fold is opened.

155 D The punch goes through 4 layers, so the open sheet has 8 holes in this pattern.

- A: This shows the paper with only 1 of the 2 folds opened out.
 B: This is the right pattern reflected.
 C: This is what a punch in a different place would give.
 E: This is what a punch in a different place would give.

156 A The punch goes through 4 layers, so the open sheet has 8 holes in this pattern.

- B: This shows only where the punch went in, before any fold is opened.
 C: This is the right pattern turned round.
 D: This is what a punch in a different place would give.
 E: This is what a punch in a different place would give.

157 A The punch goes through 4 layers, so the open sheet has 8 holes in this pattern.

- B: This shows the paper with only 1 of the 2 folds opened out.
 C: This is the right pattern turned round.
 D: This is what a punch in a different place would give.
 E: This is what a punch in a different place would give.

158 A The punch goes through 4 layers, so the open sheet has 8 holes in this pattern.

- B: This shows the paper with only 1 of the 2 folds opened out.
 C: This is the right pattern reflected.
 D: This is what a punch in a different place would give.
 E: This is what a punch in a different place would give.

159 A The punch goes through 4 layers, so the open sheet has 8 holes in this pattern.

- B: This shows only where the punch went in, before any fold is opened.
 C: This is what a punch in a different place would give.
 D: This is what a punch in a different place would give.
 E: This shows the paper with only 1 of the 2 folds opened out.

160 B The punch goes through 4 layers, so the open sheet has 8 holes in this pattern.

A: This shows only where the punch went in, before any fold is opened.

C: This is the right pattern turned round.

D: This is what a punch in a different place would give.

E: This is what a punch in a different place would give.

How every answer was checked

Every question in this book was made by a computer program from exact geometry, then checked twice, by two methods written independently of each other. A question was printed only if both methods found exactly one correct option. Questions that failed were thrown away and replaced.

Cube nets.

The net is folded into a cube. Each option is compared with the folded cube in all 24 ways a cube can be turned, pattern by pattern. In the NOT questions the check is turned round: exactly four options must match the folded cube, and the answer must match none of its 24 turns.

Views of 3D shapes.

A drawing does not always settle a shape, because a cube can hide behind others. So the program searches every arrangement of the stated number of cubes, each sitting on the table or on another cube, that would be drawn exactly the same. A question was used only when there is just one such arrangement.

Turning 3D shapes.

The program lists every way of joining 6 cubes face to face (3,481 ways, counting each way round separately) and checks that each drawing could only show one shape. Only the correct option can be turned to match the first shape; mirror images never can.

Paper folding.

The paper is opened out on the computer, fold by fold, and every layer the punch went through gets its hole. The second method folds the drawn paper again from the dashed lines and arrows as printed, and checks that each picture is what the fold before it makes.

Checking the drawings.

The second method works from the finished drawings, the lines and shapes as printed, rather than from the program's own description of each question. If a drawing had differed from the question it was meant to show, the check would have failed.

While this book was being made, the program rejected 57 candidate questions that failed these checks or its rules for a fair question. It also caught all 989 faulty questions planted on purpose to test the checks.

Found something that looks wrong? Please write to support@bitygan.com.

UNATUM online: getunatum.com

The full book

3D Spatial Reasoning, Book 2: Advanced

- 200 questions, 50 of each kind, in sets of 10 that get harder as you go
- Two timed mixed tests of 20 questions, like a real paper
- Every section starts with what to do, three tips and two worked examples
- A quick answer key for all 240 questions
- Every answer explained: why the right answer is right, and why each wrong answer is wrong
- A score record to track progress, and how every answer was checked

In print, and as a PDF to print at home:

getunatum.com

© 2026 Biggie Ganyo. All rights reserved. This free sample may be printed and shared, unchanged and free of charge.