

Shapes Around Us

All 11 questions from the CBSE CT Handbook, each with think time, a hint and an animated step-by-step solution

3

Abstraction

3

Logical reasoning

2

Decomposition

2

Pattern recognition

1

Algorithmic thinking

Ready-to-teach smartboard lessons, one click at a time.

How each question runs

1

Think

Students try alone for 60 seconds and write their answer in the handbook.

2

Hint

Show the hint. Give 1 more minute. Ask 2–3 children with different answers to explain.

3

Solve

Click once per step. Ask the class to predict each step before you click.

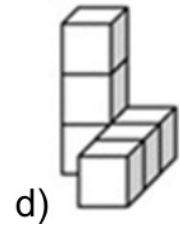
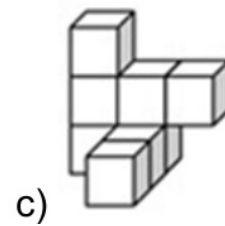
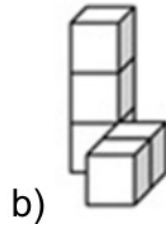
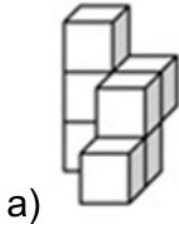
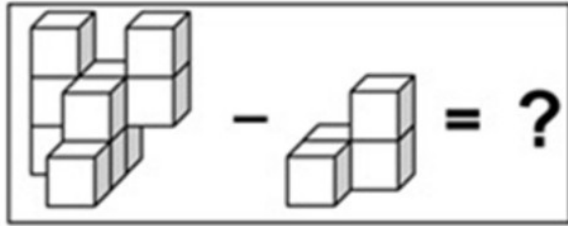
4

Discuss

Use the common mistake and extension in the notes.

The process of thinking matters more than the correct answer. Let children make mistakes, share strategies and explain their reasoning (CBSE Circular Acad-18/2026).

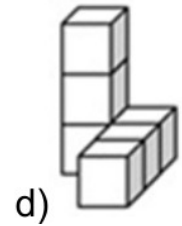
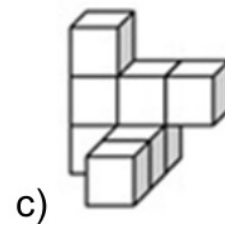
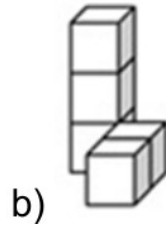
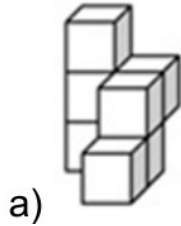
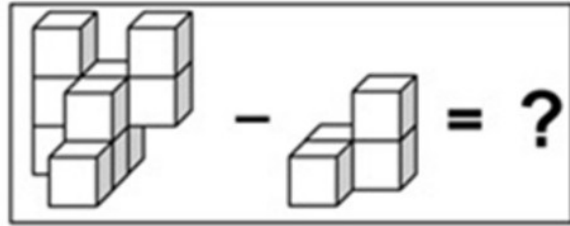
What will come in place of "?" Note: You cannot rotate the images



60s

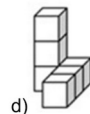
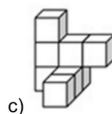
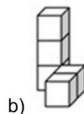
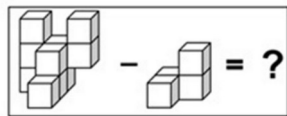
Think on your own first. Write your answer in your handbook. Then tell your partner HOW you found it.

What will come in place of "?" Note: You cannot rotate the images

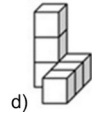
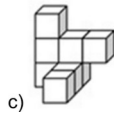
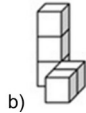
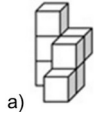
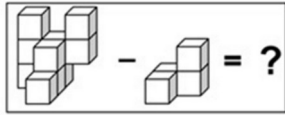


Hint: Find where the smaller block shape fits inside the bigger one, cube by cube. What remains after you take it away?

Which shape is left after subtracting?



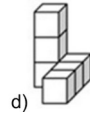
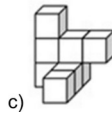
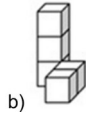
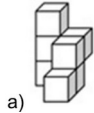
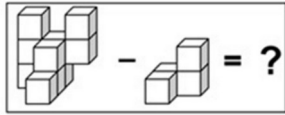
Which shape is left after subtracting?



1

Find exactly where the smaller arrangement sits inside the bigger one.

Which shape is left after subtracting?



1

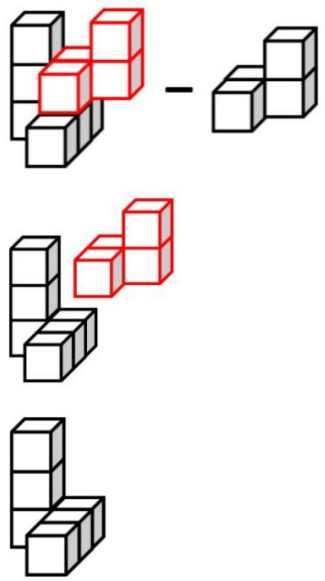
Find exactly where the smaller arrangement sits inside the bigger one.

2

Remove those cubes, position by position (shown in red).

Which shape is left after subtracting?

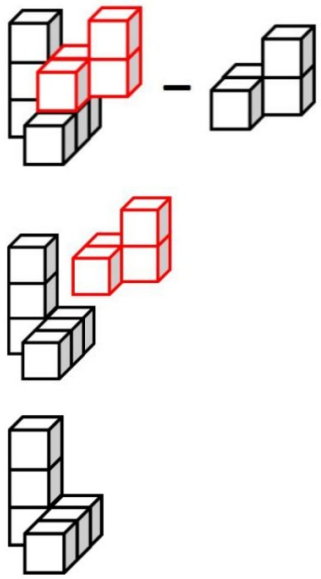
From the Teacher Handbook



- 1 Find exactly where the smaller arrangement sits inside the bigger one.
- 2 Remove those cubes, position by position (shown in red).
- 3 The cubes left over match option d.

Which shape is left after subtracting?

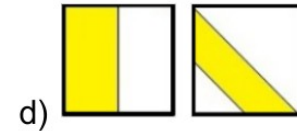
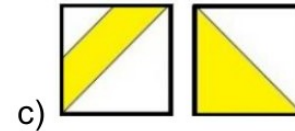
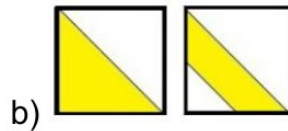
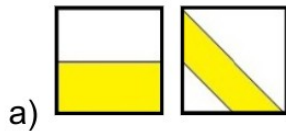
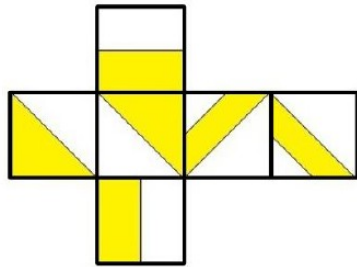
From the Teacher Handbook



- 1 Find exactly where the smaller arrangement sits inside the bigger one.
- 2 Remove those cubes, position by position (shown in red).
- 3 The cubes left over match option d.

Answer: **d**

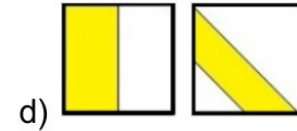
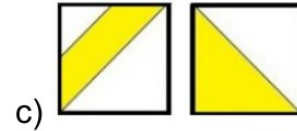
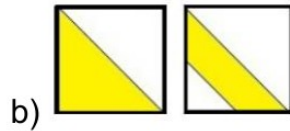
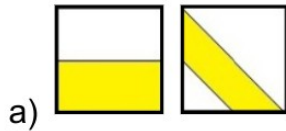
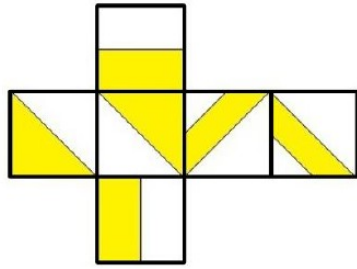
The figure below forms a cube when folded. Which of the following options represents a pair of opposite faces of the cube? Note: You cannot rotate the question or option images



60s

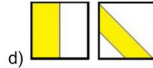
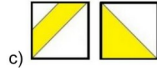
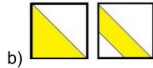
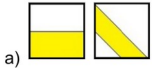
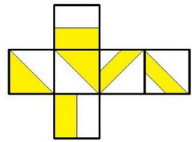
Think on your own first. Write your answer in your handbook. Then tell your partner HOW you found it.

The figure below forms a cube when folded. Which of the following options represents a pair of opposite faces of the cube? Note: You cannot rotate the question or option images



Hint: Number the faces of the net 1 to 6. When folded, which faces can never touch? Those are opposite.

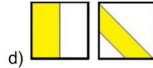
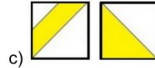
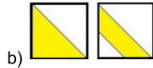
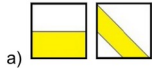
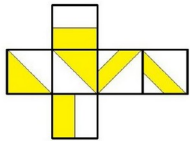
Which pair are opposite faces of the cube?



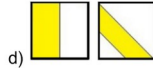
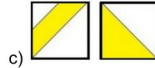
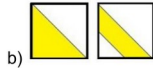
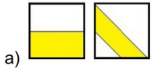
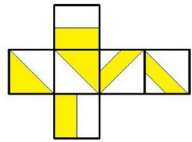
Which pair are opposite faces of the cube?

1

Number the faces of the net 1 to 6.



Which pair are opposite faces of the cube?

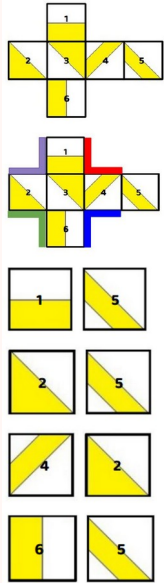


1 Number the faces of the net 1 to 6.

2 Fold it in your mind: the opposite pairs are 1 & 6, 2 & 4 and 3 & 5.

Which pair are opposite faces of the cube?

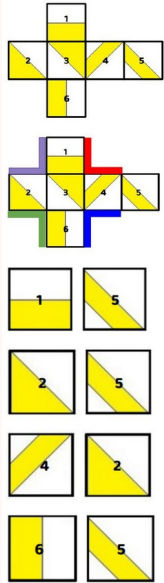
From the Teacher Handbook



- 1 Number the faces of the net 1 to 6.
- 2 Fold it in your mind: the opposite pairs are 1 & 6, 2 & 4 and 3 & 5.
- 3 Only option c shows a pair of opposite faces.

Which pair are opposite faces of the cube?

From the Teacher Handbook



- 1 Number the faces of the net 1 to 6.
- 2 Fold it in your mind: the opposite pairs are 1 & 6, 2 & 4 and 3 & 5.
- 3 Only option c shows a pair of opposite faces.

Answer: **c**

From a rectangular piece of paper, a shape having which of the following number of angles **CANNOT** be formed by making only a **SINGLE STRAIGHT CUT** in any direction?

a) 3 angles

b) 4 angles

c) 5 angles

d) 6 angles

60s

Think on your own first. Write your answer in your handbook. Then tell your partner **HOW** you found it.

From a rectangular piece of paper, a shape having which of the following number of angles **CANNOT** be formed by making only a **SINGLE STRAIGHT CUT** in any direction?

a) 3 angles

b) 4 angles

c) 5 angles

d) 6 angles

Hint: Imagine cutting a rectangle with one straight cut: through two corners, one corner, or no corner. How many angles does each piece have?

Which number of angles **CANNOT** be made with one cut?

a) 3 angles

b) 4 angles

c) 5 angles

d) 6 angles

Which number of angles **CANNOT** be made with one cut?

a) 3 angles

b) 4 angles

c) 5 angles

d) 6 angles

1

Cut through a corner to another corner: a triangle (3 angles).

Which number of angles **CANNOT** be made with one cut?

a) 3 angles

b) 4 angles

c) 5 angles

d) 6 angles

1

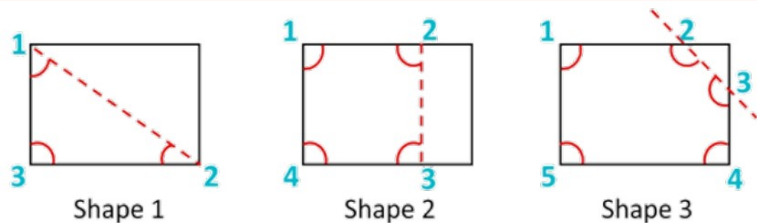
Cut through a corner to another corner: a triangle (3 angles).

2

Cut across two sides: 4 angles; cut off one corner: 5 angles.

Which number of angles CANNOT be made with one cut?

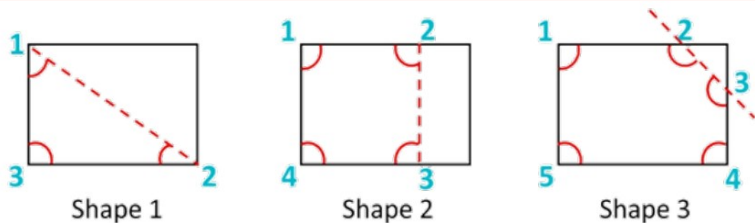
From the Teacher Handbook



- 1 Cut through a corner to another corner: a triangle (3 angles).
- 2 Cut across two sides: 4 angles; cut off one corner: 5 angles.
- 3 No single cut can give 6 angles, so the answer is d.

Which number of angles CANNOT be made with one cut?

From the Teacher Handbook



- 1 Cut through a corner to another corner: a triangle (3 angles).
- 2 Cut across two sides: 4 angles; cut off one corner: 5 angles.
- 3 No single cut can give 6 angles, so the answer is d.

Answer: d) 6 angles

Count the number of **TRIANGLES** in the image given below.



a) 4

b) 5

c) 3

d) 2

60s

Think on your own first. Write your answer in your handbook. Then tell your partner **HOW** you found it.

Count the number of **TRIANGLES** in the image given below.



a) 4

b) 5

c) 3

d) 2

Hint: Count the small triangles first. Then look for bigger triangles made of smaller parts.

How many triangles are in the image?



a) 4

b) 5

c) 3

d) 2

How many triangles are in the image?



a) 4

b) 5

c) 3

d) 2

1 Count the single triangles first.

How many triangles are in the image?



a) 4

b) 5

c) 3

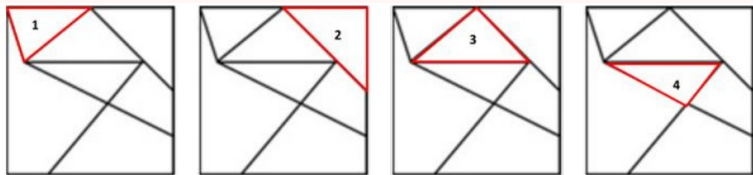
d) 2

1 Count the single triangles first.

2 Then look for triangles made by joining parts.

How many triangles are in the image?

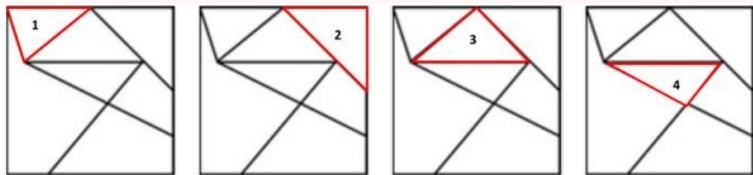
From the Teacher Handbook



- 1 Count the single triangles first.
- 2 Then look for triangles made by joining parts.
- 3 Altogether there are 4 triangles (highlighted).

How many triangles are in the image?

From the Teacher Handbook



- 1 Count the single triangles first.
- 2 Then look for triangles made by joining parts.
- 3 Altogether there are 4 triangles (highlighted).

Answer: a) 4

Find the ODD one out.



60s

Think on your own first. Write your answer in your handbook. Then tell your partner HOW you found it.

Find the ODD one out.



Hint: Look at the letter and the number inside each shape. How are they connected to the shape's name and sides?

Find the ODD one out



Find the ODD one out

1

Rule: the letter is the first letter of the shape's name; the number is its number of sides.



Find the ODD one out



1

Rule: the letter is the first letter of the shape's name; the number is its number of sides.

2

T3 (triangle, 3), S4 (square, 4) and P5 (pentagon, 5) follow the rule.

Find the ODD one out



1

Rule: the letter is the first letter of the shape's name; the number is its number of sides.

2

T3 (triangle, 3), S4 (square, 4) and P5 (pentagon, 5) follow the rule.

3

M4 does not follow the rule, so option a is the odd one out.

Find the ODD one out



1

Rule: the letter is the first letter of the shape's name; the number is its number of sides.

2

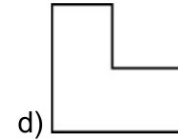
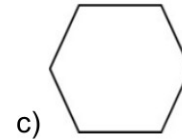
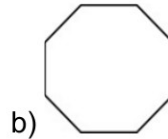
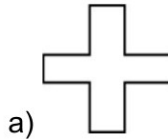
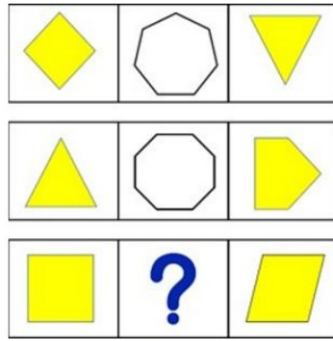
T3 (triangle, 3), S4 (square, 4) and P5 (pentagon, 5) follow the rule.

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M4 does not follow the rule, so option a is the odd one out.

Answer: **a**

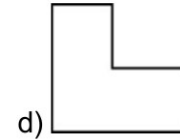
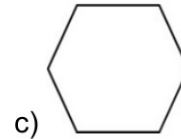
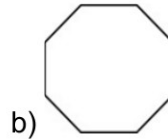
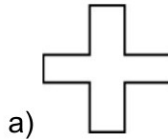
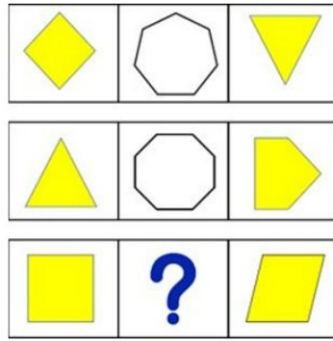
If each of the given terms follows the same theme, what will come in place of "?"



60s

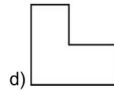
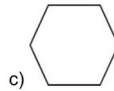
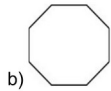
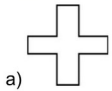
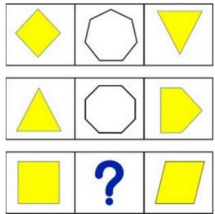
Think on your own first. Write your answer in your handbook. Then tell your partner HOW you found it.

If each of the given terms follows the same theme, what will come in place of "?"



Hint: In each row, count the sides of the two yellow shapes. How is that connected to the middle shape?

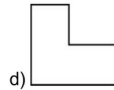
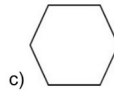
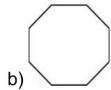
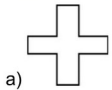
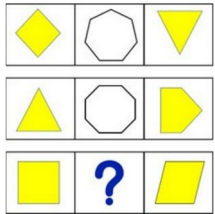
What comes in place of '?'



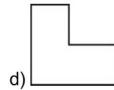
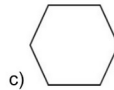
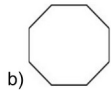
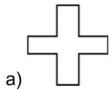
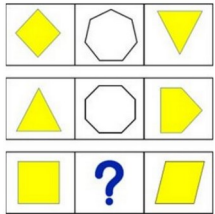
What comes in place of '?'

1

In each row, add the sides of the two yellow shapes.



What comes in place of '?'



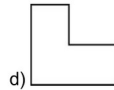
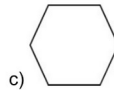
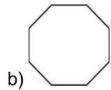
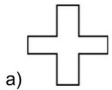
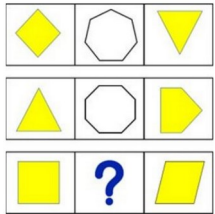
1

In each row, add the sides of the two yellow shapes.

2

The middle shape has that many sides.

What comes in place of '?'

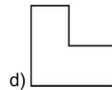
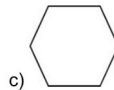
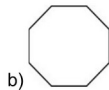
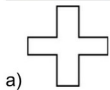
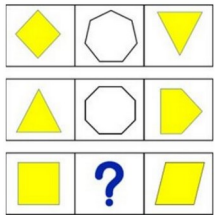


1 In each row, add the sides of the two yellow shapes.

2 The middle shape has that many sides.

3 Last row: square 4 + parallelogram 4 = 8, so the octagon (option b).

What comes in place of '?'



1

In each row, add the sides of the two yellow shapes.

2

The middle shape has that many sides.

3

Last row: square 4 + parallelogram 4 = 8, so the octagon (option b).

Answer: **b**

Each face of a triangular prism is coloured with a colour in such a way that no two adjacent faces have the same colour. What is the **MINIMUM** number of colours required to do this? Note: Two faces are said to be adjacent if they share a common edge

a) 2

b) 3

c) 4

d) 5

60s

Think on your own first. Write your answer in your handbook. Then tell your partner **HOW** you found it.

Each face of a triangular prism is coloured with a colour in such a way that no two adjacent faces have the same colour. What is the **MINIMUM** number of colours required to do this? Note: Two faces are said to be adjacent if they share a common edge

a) 2

b) 3

c) 4

d) 5

Hint: Look at one triangle face. How many faces touch it? Do the two triangle faces touch each other?

Minimum colours for a triangular prism

a) 2

b) 3

c) 4

d) 5

Minimum colours for a triangular prism

a) 2

b) 3

c) 4

d) 5

1

The 3 rectangle faces all touch each other and the triangle faces.

Minimum colours for a triangular prism

a) 2

b) 3

c) 4

d) 5

1

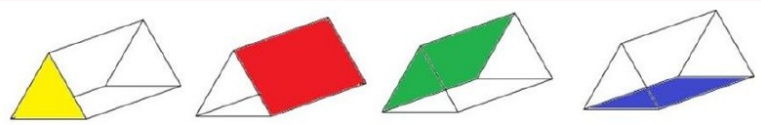
The 3 rectangle faces all touch each other and the triangle faces.

2

So the front triangle and the 3 rectangles need 4 different colours.

Minimum colours for a triangular prism

From the Teacher Handbook



1

The 3 rectangle faces all touch each other and the triangle faces.

2

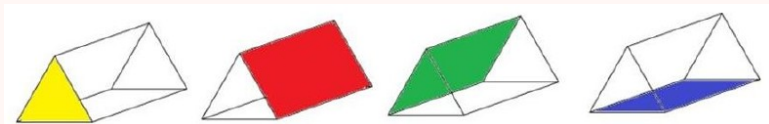
So the front triangle and the 3 rectangles need 4 different colours.

3

The two triangles don't touch, so they can share a colour: 4 colours.

Minimum colours for a triangular prism

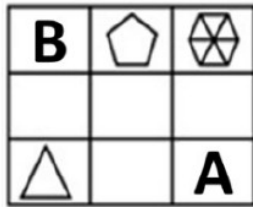
From the Teacher Handbook



- 1 The 3 rectangle faces all touch each other and the triangle faces.
- 2 So the front triangle and the 3 rectangles need 4 different colours.
- 3 The two triangles don't touch, so they can share a colour: 4 colours.

Answer: c) 4

Which of these shapes will come in place of A and B, such that no two shapes having the same number of sides, pattern, or colour appear in the same row or column? Note: Not all blocks will necessarily have a shape present in them



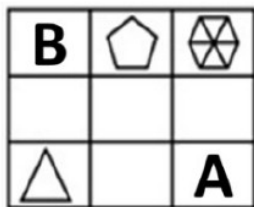
- a) **A** =  **B** = 
- c) **A** =  **B** = 

- b) **A** =  **B** = 
- d) **A** =  **B** = 

60s

Think on your own first. Write your answer in your handbook. Then tell your partner HOW you found it.

Which of these shapes will come in place of A and B, such that no two shapes having the same number of sides, pattern, or colour appear in the same row or column? Note: Not all blocks will necessarily have a shape present in them



a) **A** =  **B** = 

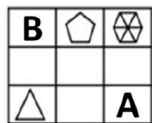
c) **A** =  **B** = 

b) **A** =  **B** = 

d) **A** =  **B** = 

Hint: A must not match any shape in its row or column in sides, pattern or colour. Check each option against the row and column.

Which shapes can go in A and B?



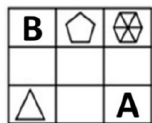
a) **A** =  **B** = 

c) **A** =  **B** = 

b) **A** =  **B** = 

d) **A** =  **B** = 

Which shapes can go in A and B?



a) **A** = **B** =

c) **A** = **B** =

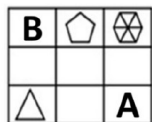
b) **A** = **B** =

d) **A** = **B** =

1

For A: check its row and column for the same sides, pattern or colour.

Which shapes can go in A and B?



a) **A** = **B** =

c) **A** = **B** =

b) **A** = **B** =

d) **A** = **B** =

1

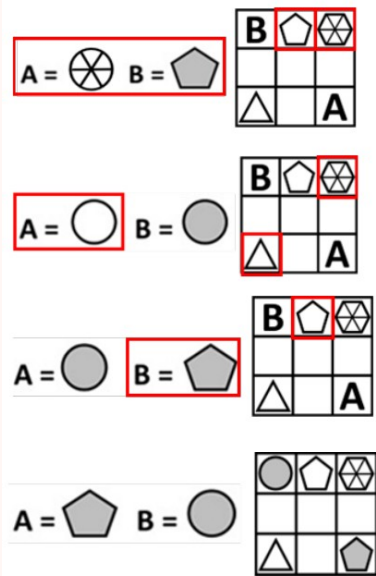
For A: check its row and column for the same sides, pattern or colour.

2

Options b, c and d each break the rule somewhere (same pattern, colour or shape).

Which shapes can go in A and B?

From the Teacher Handbook



1

For A: check its row and column for the same sides, pattern or colour.

2

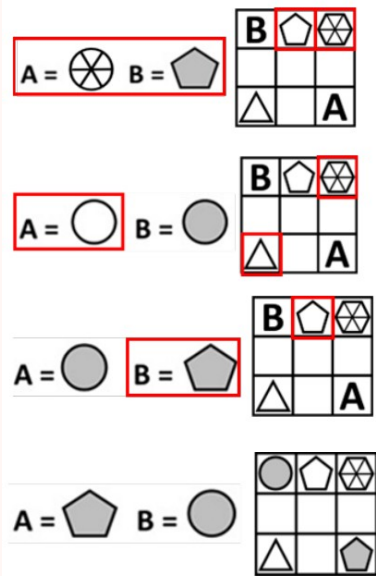
Options b, c and d each break the rule somewhere (same pattern, colour or shape).

3

Only option a fits both A and B.

Which shapes can go in A and B?

From the Teacher Handbook



1

For A: check its row and column for the same sides, pattern or colour.

2

Options b, c and d each break the rule somewhere (same pattern, colour or shape).

3

Only option a fits both A and B.

Answer: **a**

Six concrete blocks of cubical shape are used for building the stairs as shown below. How many faces of these blocks are not visible?



a) 12

b) 15

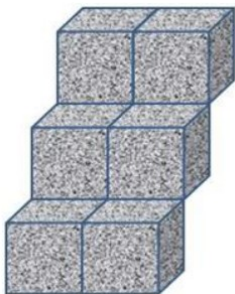
c) 21

d) 24

60s

Think on your own first. Write your answer in your handbook. Then tell your partner HOW you found it.

Six concrete blocks of cubical shape are used for building the stairs as shown below. How many faces of these blocks are not visible?



a) 12

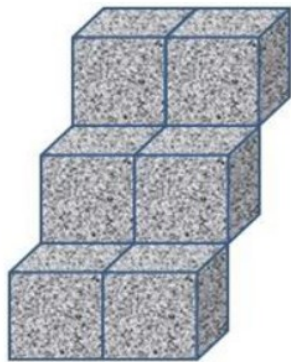
b) 15

c) 21

d) 24

Hint: Each cube has 6 faces. How many faces are there in total? Count the faces you CAN see.

How many faces are hidden?



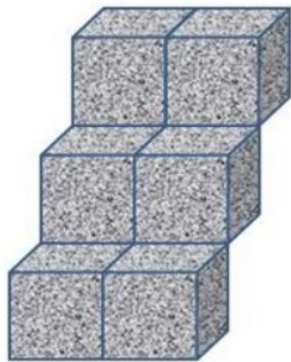
a) 12

b) 15

c) 21

d) 24

How many faces are hidden?



a) 12

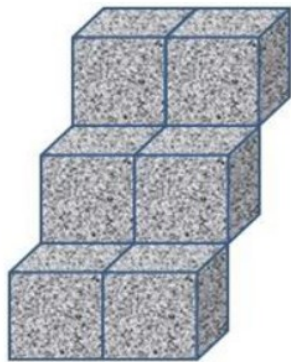
b) 15

c) 21

d) 24

1 6 cubes $\times$ 6 faces = 36 faces in total.

How many faces are hidden?



a) 12

b) 15

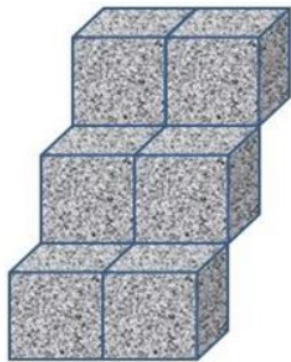
c) 21

d) 24

1 6 cubes $\times$ 6 faces = 36 faces in total.

2 Faces you can see: 15.

How many faces are hidden?



a) 12

b) 15

c) 21

d) 24

1 6 cubes $\times$ 6 faces = 36 faces in total.

2 Faces you can see: 15.

3 Hidden faces = $36 - 15 = 21$.

How many faces are hidden?



a) 12

b) 15

c) 21

d) 24

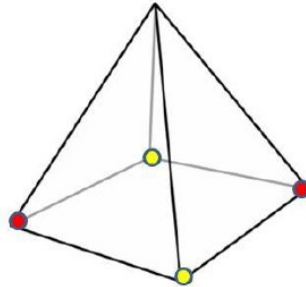
1 6 cubes $\times$ 6 faces = 36 faces in total.

2 Faces you can see: 15.

3 Hidden faces = $36 - 15 = 21$.

Answer: **c) 21**

How many edges of the pyramid shown below have a yellow dot at one of their corners but do not have a red dot on the other corner?



a) 1

b) 2

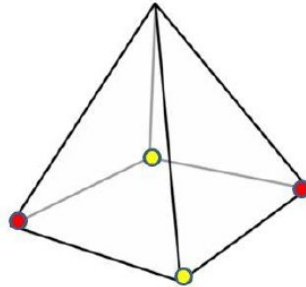
c) 3

d) 4

60s

Think on your own first. Write your answer in your handbook. Then tell your partner HOW you found it.

How many edges of the pyramid shown below have a yellow dot at one of their corners but do not have a red dot on the other corner?



a) 1

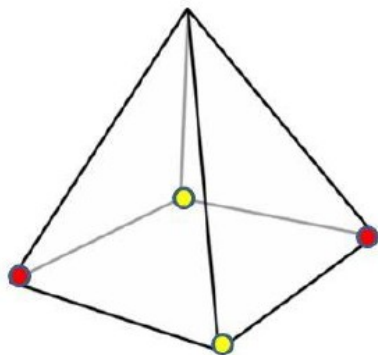
b) 2

c) 3

d) 4

Hint: Find each edge that has a yellow dot at one end. Then check its other end: is it red?

Edges with yellow at one end but NOT red at the other



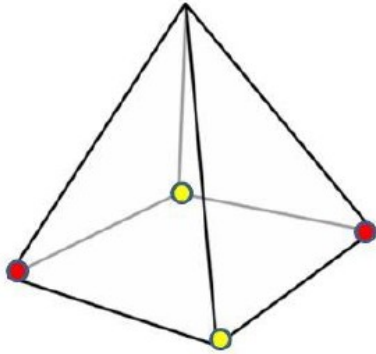
a) 1

b) 2

c) 3

d) 4

Edges with yellow at one end but NOT red at the other



- 1 List every edge that has a yellow dot.

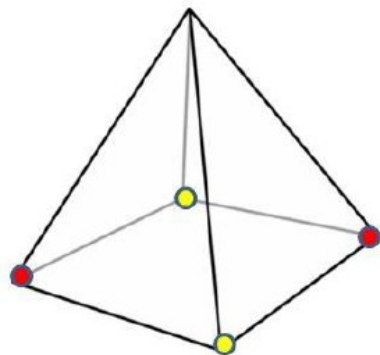
a) 1

b) 2

c) 3

d) 4

Edges with yellow at one end but NOT red at the other



a) 1

b) 2

c) 3

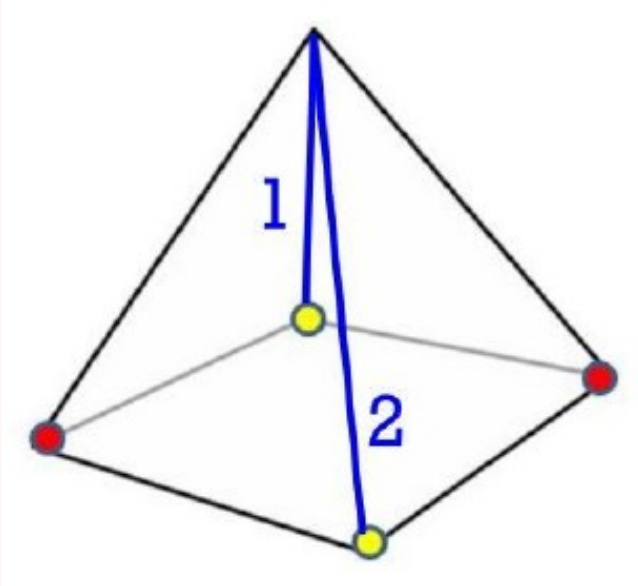
d) 4

1 List every edge that has a yellow dot.

2 Cross out any of those whose other end is red.

Edges with yellow at one end but NOT red at the other

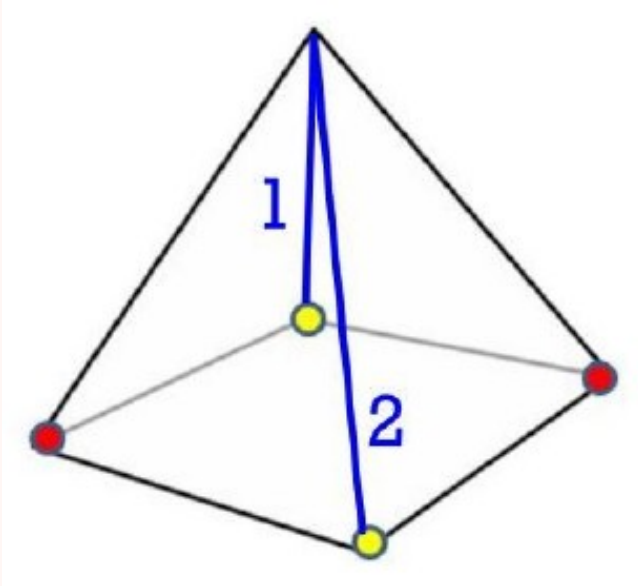
From the Teacher Handbook



- 1 List every edge that has a yellow dot.
- 2 Cross out any of those whose other end is red.
- 3 2 edges are left (marked 1 and 2).

Edges with yellow at one end but NOT red at the other

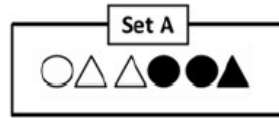
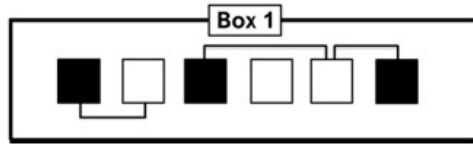
From the Teacher Handbook



- 1 List every edge that has a yellow dot.
- 2 Cross out any of those whose other end is red.
- 3 2 edges are left (marked 1 and 2).

Answer: **b) 2**

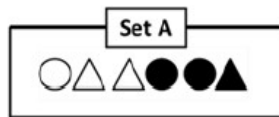
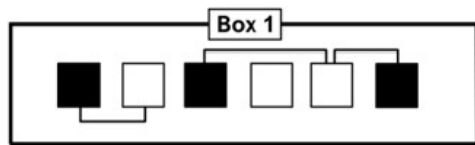
All the shapes of Set A must be placed into the squares present in Box 1, such that • Each square has EXACTLY ONE shape • The shape and the square CANNOT be of the same colour • Two squares connected by a line CANNOT have the same shape inside them Which option shows the shapes which are NOT next to each other in the final arrangement?



60s

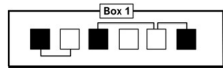
Think on your own first. Write your answer in your handbook. Then tell your partner HOW you found it.

All the shapes of Set A must be placed into the squares present in Box 1, such that • Each square has EXACTLY ONE shape • The shape and the square CANNOT be of the same colour • Two squares connected by a line CANNOT have the same shape inside them Which option shows the shapes which are NOT next to each other in the final arrangement?



Hint: Start with the square that has the fewest choices. Test one case at a time and see if the rest can still be placed.

Which two shapes are NOT next to each other?



(a)  



(b)  

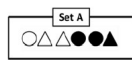
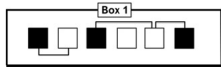
(c)  

(d)  

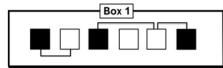
Which two shapes are NOT next to each other?

1

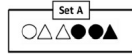
The white square can hold a black triangle or a black circle. Test both.

(a)  (b)  (c)  (d)  

Which two shapes are NOT next to each other?



(a)  



(b)  

(c)  

(d)  

1

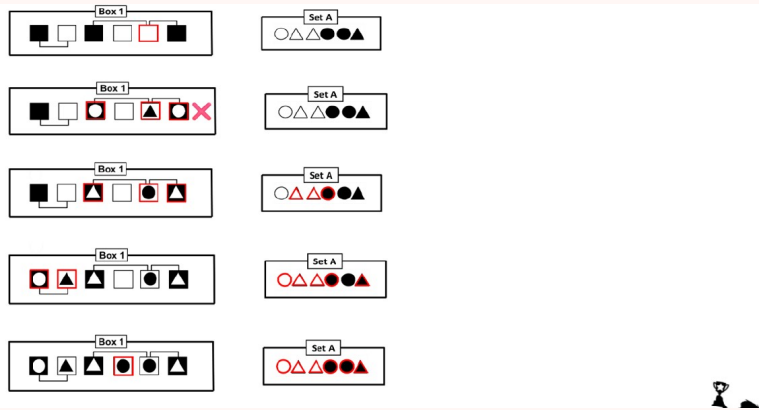
The white square can hold a black triangle or a black circle. Test both.

2

A black triangle there leaves no valid shapes for its neighbours, so it holds the black circle.

Which two shapes are NOT next to each other?

From the Teacher Handbook



1

The white square can hold a black triangle or a black circle. Test both.

2

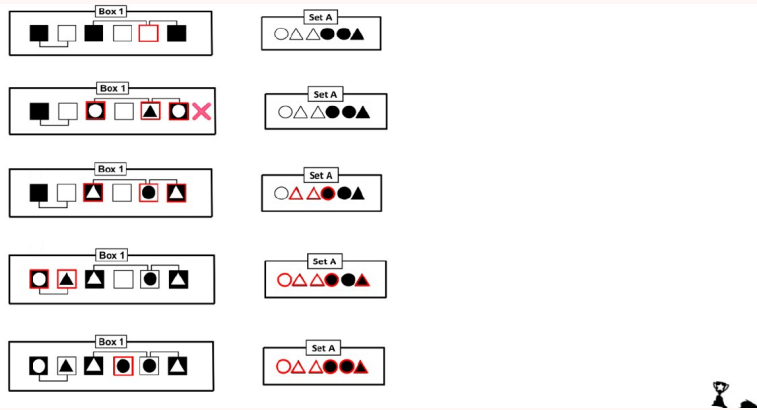
A black triangle there leaves no valid shapes for its neighbours, so it holds the black circle.

3

Placing the rest by the rules, the black triangle and black circle are not next to each other.

Which two shapes are NOT next to each other?

From the Teacher Handbook



- 1 The white square can hold a black triangle or a black circle. Test both.
- 2 A black triangle there leaves no valid shapes for its neighbours, so it holds the black circle.
- 3 Placing the rest by the rules, the black triangle and black circle are not next to each other.

Answer: **a**

Chapter 1 complete

Ask: Which question was the hardest? Which strategy helped you most: breaking it into parts, spotting a pattern, ignoring details, or going step by step?



Decomposition



Abstraction



Pattern recognition



Algorithmic
thinking

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