



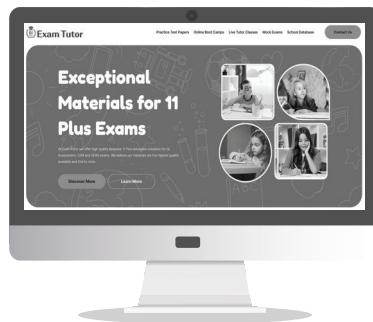
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CEM 11+ MATHS PAPER 1

2026 EDITION

Time 60 Minutes



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for every question in this practice paper.

Name: _____

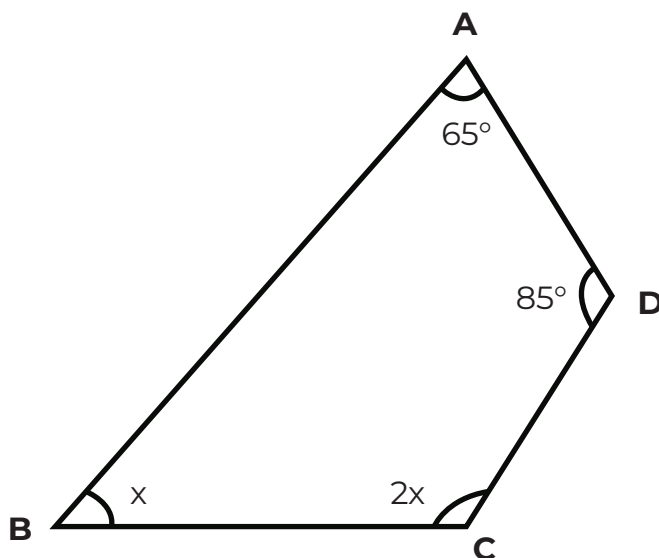
Score= _____ /50 Percentage = _____

Math – Paper 1

1

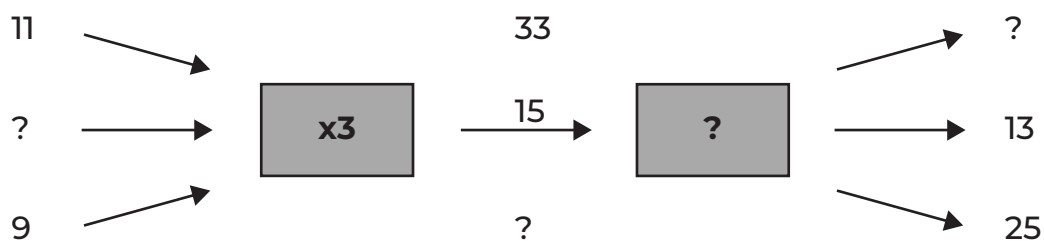
What is the angle at point C of this quadrilateral?

- A 105°
- B 70°
- C 140°
- D 60°
- E 120°



2

function machine uses two operations. The starting number is first 'x3' and the second operation is '?'. Use the information shown on the diagram below to find what the second operation must be based on these input and output numbers.

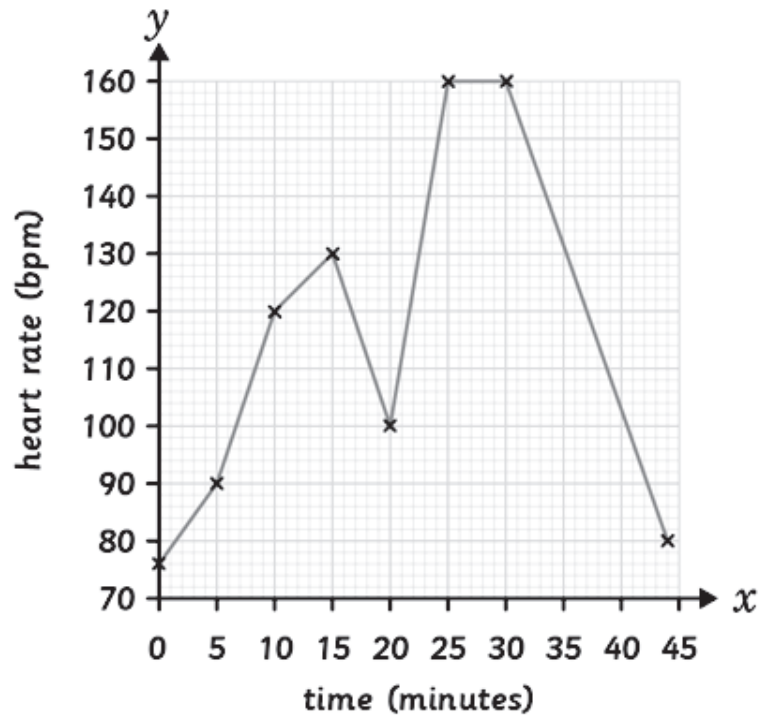


- A $\times 2$
- B $+5$
- C -2
- D -5
- E $+2$

3

The line graph shows Jack's heart rate during exercise. When Jack begins to sprint, his heart rate increases steadily by a total of 60 beats per minute, until he maintains a constant heart rate for 5 minutes, after this he slows to a jogging pace. **For how long does Jack sprint?**

- A 25 minutes
- B 20 minutes
- C 5 minutes
- D 10 minutes
- E 15 minutes



4

Which of these statements is true?

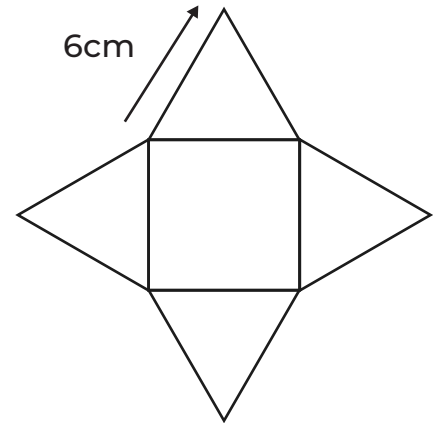
- A A cylinder has 2 vertices
- B A parallelogram has opposite sides of equal length
- C A square based pyramid has half the vertices of a cuboid
- D An isosceles triangle has no sides the same length
- E A triangular prism has 8 edges

18

This net can be folded to form a square-based pyramid.

What is the perimeter of this net?

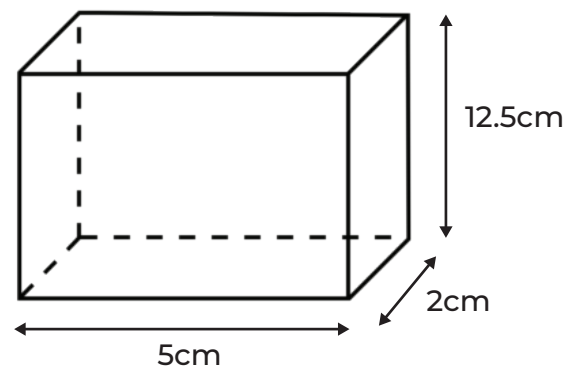
- A 36 cm
- B 24 cm
- C 48 cm
- D 72 cm
- E 42 cm



19

Look at the cuboid below. A cube has the same volume as this cuboid. Calculate the length of one side of the cube.

- A 125 cm
- B 25 cm
- C 5 cm
- D 15 cm
- E 41.6 cm

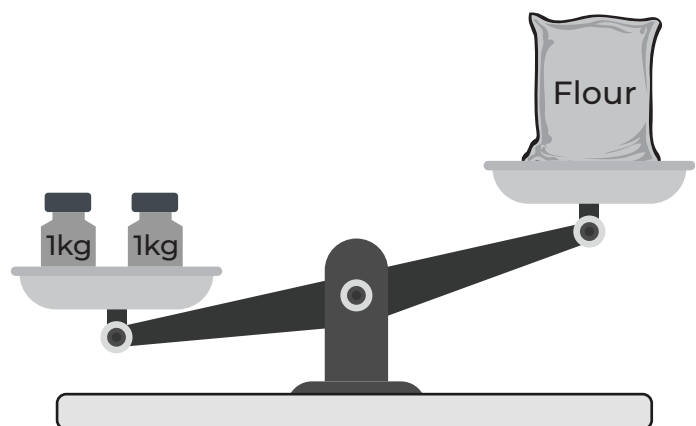


20

The diagram shows the weight of one bag of flour.

What would be the weight of $\frac{1}{5}$ of a bag of flour?

- A 500g
- B 200g
- C 350g
- D 400g
- E 300g



33

How many prime numbers are there between 50 and 100?

A 12

B 8

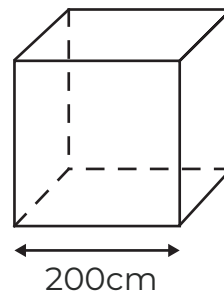
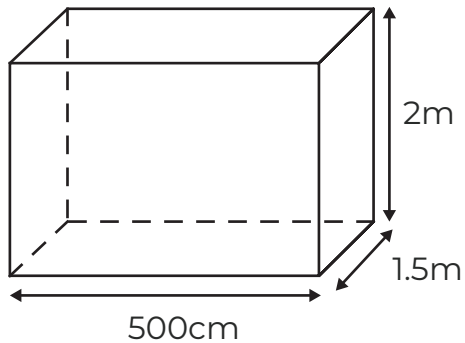
C 7

D 10

E 9

34

Find the difference in volume between the cuboid and cube.

A 7 m^3 B 8 m^3 C 15 m^3 D 750 cm^3 E 9 m^3

35

A pair of boots are priced at £85 and a purse costs £18. They are reduced by 25% during Boxing Day sales. **How much do the boots and purse cost in total at their sale prices?**

A £ 45.20

B £ 82.75

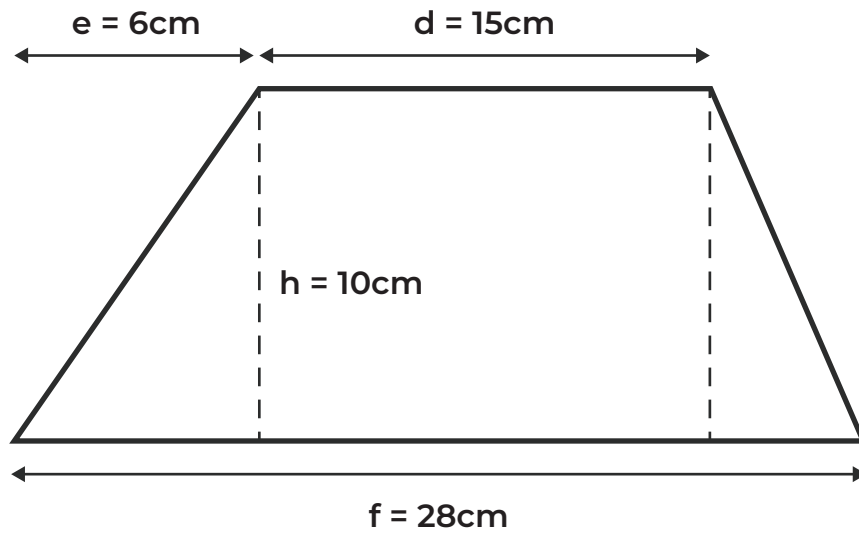
C £ 25.75

D £ 63.75

E £ 77.25

39

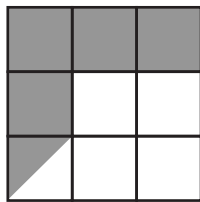
What is the area of the trapezium?



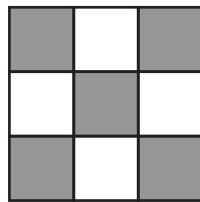
- A 215 cm^2 B 220 cm^2 C 280 cm^2 D 270 cm^2 E 310 cm^2

40

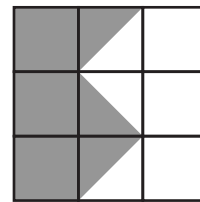
Which grids have $\frac{1}{2}$ shaded?



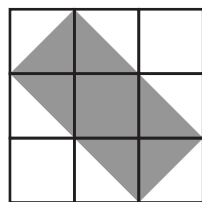
1



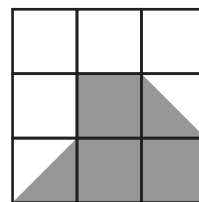
2



3



4



5

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

41

Jamie is half as tall as his mother.
Jamie is 110 cm shorter than his father.
Jamie's father is 1.84 m tall.

How tall is Jamie's mother?

- A 142 cm
 - B 136 cm
 - C 148 cm
 - D 152 cm
 - E 144 cm
-

42

Wilson thinks of a number, he adds 8 and his answer is -2. He then adds an unknown number to -2, his answer is 4. **How much did he add in total to the original number?**

- A 12
 - B 6
 - C 16
 - D 8
 - E 14
-

43

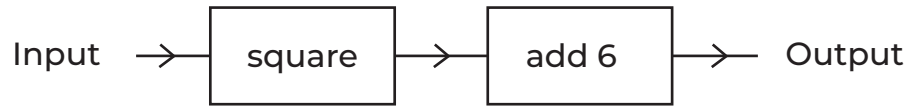
Which 3D shapes can all both roll and slide?

- A Cube, cone and cylinder
 - B Sphere and triangular prism
 - C Cone, cylinder and hemisphere
 - D Square-based pyramid and cone
 - E Hemisphere and cuboid
-

44

An unknown number goes into the function machine below.

If the output number is 31, what is the input number?



- A 93
 - B 1369
 - C 31
 - D 5
 - E 6
-

45

Look at the five calculations below.

$$a + 37 = 62$$

$$b \div 6 = 4$$

$$c - 18 = 15$$

$$3d = 63$$

$$e - 14 = 14$$

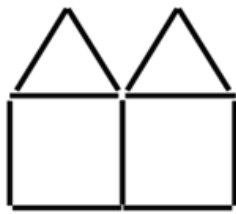
Which letter represents the largest number?

- A B C D E
-

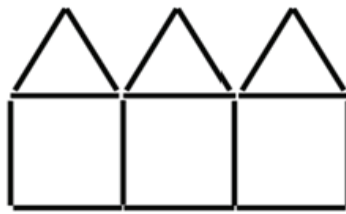
5



Pattern 1



Pattern 2



Pattern 3

Using the patterns 1 to 3 select the missing information from the table below.

Pattern	1	2	3	4	5
Number of matchsticks	?	?	?	?	?

How many matchsticks can be found in pattern 4 and 5?

- A 16, 21
- B 21, 26
- C 24, 28
- D 26, 31
- E 20, 25

6

Which of these letters contain both perpendicular and parallel lines?

- A L
- B N
- C F
- D M
- E T

7

A cutlery drawer contains three types of spoons. A dessert spoon is 18cm long, a tablespoon is 6.5cm longer than a teaspoon and a teaspoon is half the length of a dessert spoon.

How much longer would the length of three tablespoons be than a teaspoon, a tablespoon and a dessert spoons' combined length?

- A 46.5cm
- B 4m
- C 42.5cm
- D 400mm
- E 40mm

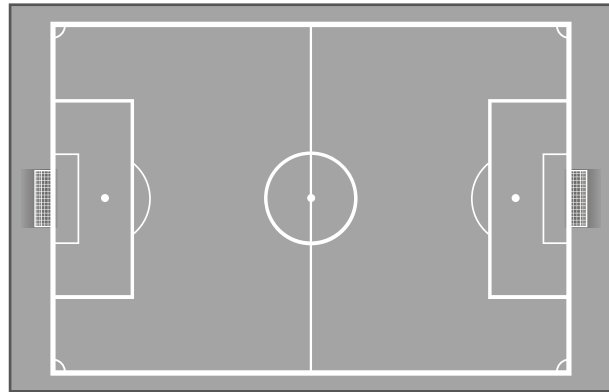
13

After fundraising a school football club is able to double the size of their previous pitch.

Area of the previous pitch: $55 \times 30 = 1650\text{m}^2$

What is the perimeter of the new pitch?

- A 170m
- B 340m
- C 6600m
- D 560m
- E 510m

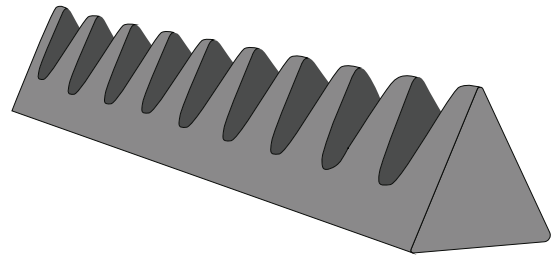


14

Charlie opens up a Toblerone box and lays it out flat. He finds 2 triangular faces connected on either end of 3 rectangular faces.

What shape is this box a net of?

- A Triangular-based pyramid
- B Square-based pyramid
- C Cone
- D Triangular prism
- E Cylinder



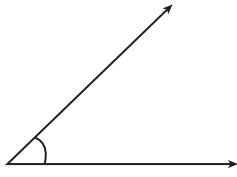
15

At a zoo pandas are each fed 731g of bamboo for lunch and another 232g for dinner. There are 5 pandas at the zoo in total. **How much bamboo do they consume altogether in a day?**

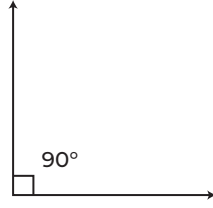
- A 2495g
- B 2500g
- C 4251g
- D 4815g
- E 3024g

19

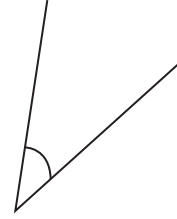
Which of these angles is greater than obtuse?



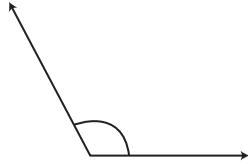
A



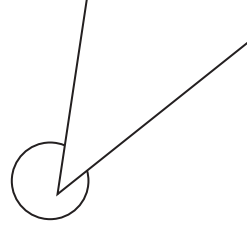
B



C



D



E

20

Which fraction is the smallest?

A $\frac{2}{3}$

B $\frac{8}{4}$

C $\frac{3}{10}$

D $\frac{1}{4}$

E $\frac{1}{2}$

21

Elise was given a 130 ml bottle of medicine with instructions to take 5ml twice a day until the bottle is finished. **How many days will it take to finish the bottle following these instructions?**

A 13

B 26

C 14

D 25

E 10

22

Select the number to complete the equation.

$625 \div 5^2 = \underline{\hspace{2cm}}$

A 5

B 1

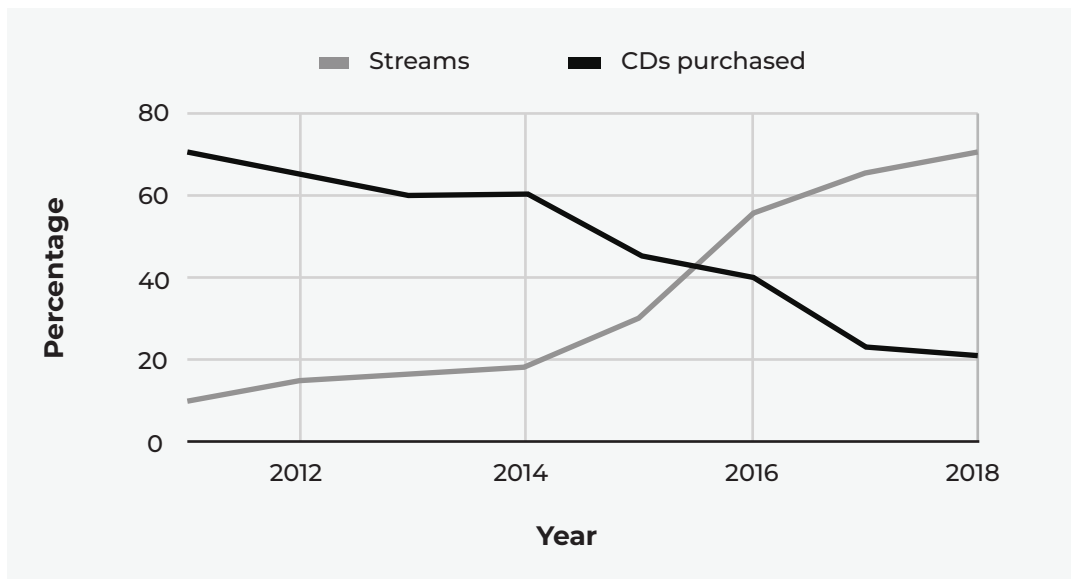
C 50

D 125

E 25

26

The line graph below shows the percentage of total music sales by method.

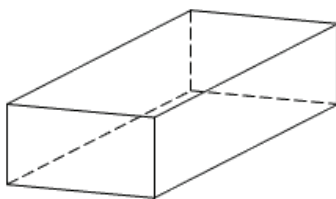


In what year did streaming become more popular than purchasing CDs?

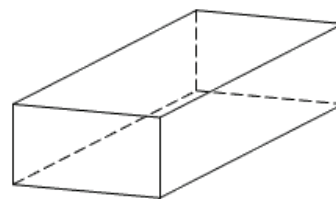
- A** 2017 **B** 2015 **C** 2016 **D** 2018 **E** 2014

27

Two cuboids have the same volume.



7cm x 5cm x 9cm



3cm x 10cm x a

What is the value of a?

- A** 10 cm **B** 11 cm **C** 5 cm **D** 10.5 cm **E** 15 cm

30

Craig reads the final chapter of his novel. The chapter begins on page 166 and finishes on page 183.

How many pages has Craig read?

A 17

B 19

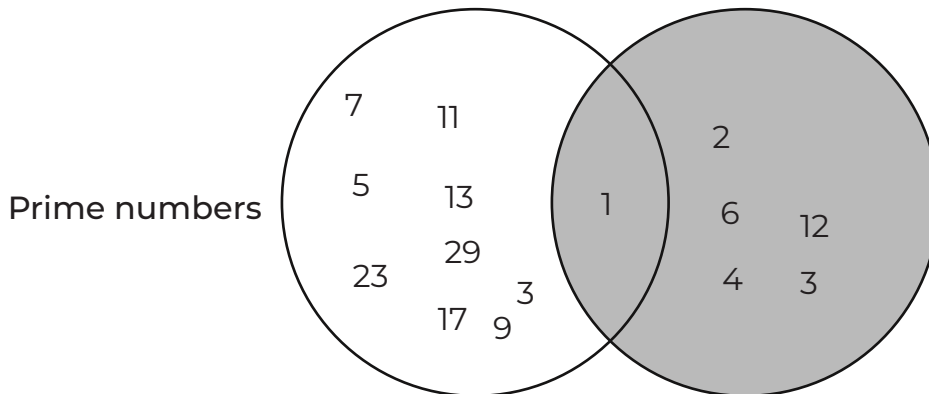
C 18

D 20

E 16

31

Look at the Venn diagram below.



What is the title missing from the shaded circle?

A Even numbers

B Factors of 12

C Multiples of 2

D Square numbers

E Cube numbers

32

Which statement is true?

A A triangular prism has 6 vertices.

B A parallelogram has one pair of parallel sides.

C The interior angles of an isosceles triangle are all different.

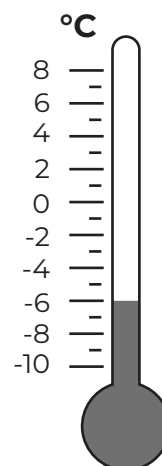
D All interior angles in a triangle add up to 360° .

E A trapezium has two pairs of parallel sides.

41

A thermometer was used to record the temperature in the Sahara Desert at 12 hour intervals. The temperature was taken at noon and again at midnight. At midnight, the temperature had dropped to the temperature shown below. **If the difference between the temperatures is 55°C , then what was the temperature recorded at noon?**

- A 50°C
- B 51°C
- C 49°C
- D 61°C
- E 55°C



42

The table below shows the price list for tickets to Barry's theme park.

Barry's theme park ticket price list			
	Child (under 12) single	Student single	Adult single
Up to 3 hours entry	£15.99	£21.99	£24.99
All day pass	£19.99	£25.99	£29.99
All day family pass	£84.49 (x2 adults and x2 children's tickets)		

How much would a family of two adults and two children save in total from purchasing an all day ticket instead of single tickets?

- A £15.47
- B £99.96
- C £15.53
- D £84.49
- E £15.51



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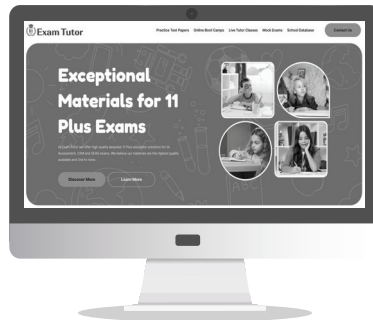
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CEM 11+

NON-VERBAL REASONING PAPER 1

2026 EDITION

Time 60 Minutes



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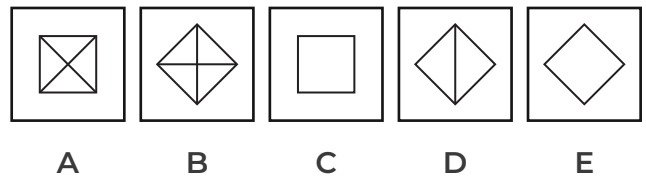
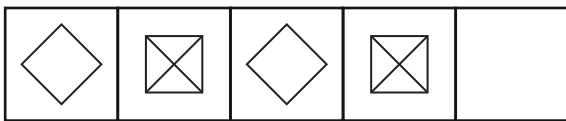
Name: _____

Score= _____ /50 Percentage = _____

Section 2

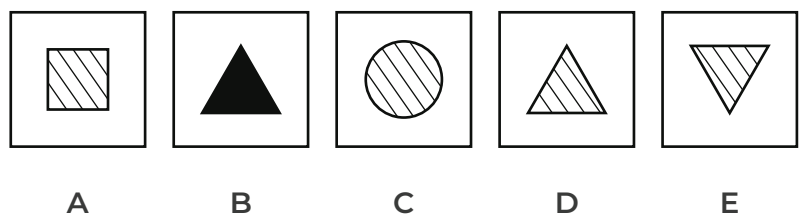
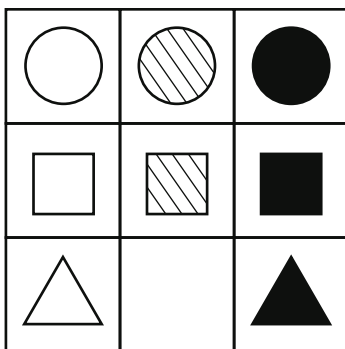
Finish The Pattern:

On the left side of the example below there are five squares arranged in the correct order. One of these squares has been left empty. To answer the question, select which of the five squares on the right **finishes the pattern** by taking the place of the empty square. Mark its letter on your answer sheet.



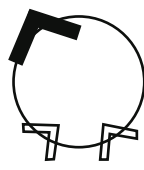
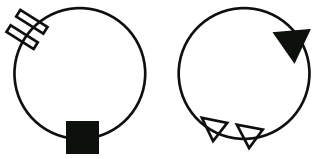
In the example above the answer is option E, the pictures alternate so that the first, third and fifth square are all matching, white with no lines and rotated 90 degrees. As the empty square is the fifth one, we know it must also match the first and third square.

Now look at the example below. This series is made up of nine squares arranged in the correct order, as you can see on the left side. One of these squares has been left empty. One of the five squares on the right should finish the pattern by taking the place of the empty square.

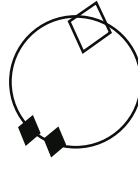


In the example above the answer is option D. Each column of the series has a circle, square and triangle, which all have the same design. The rows all contain the same shape but with a different pattern. The second column design is stripes and the third row is made up of triangles, option D fits this criteria and contains a striped triangle pointing the same direction as the rest in the series, so it must be the correct answer.

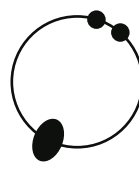
1



A



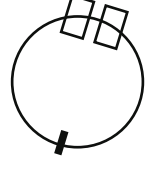
B



C

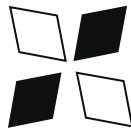
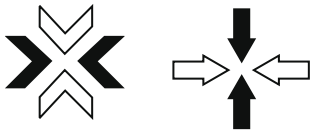


D



E

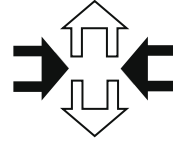
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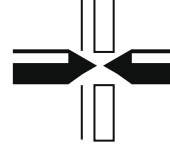
A



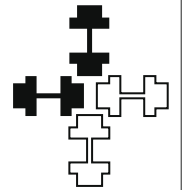
B



C

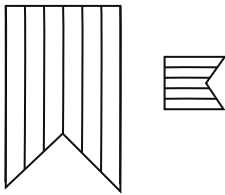


D

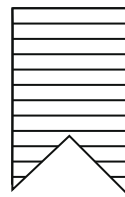


E

3



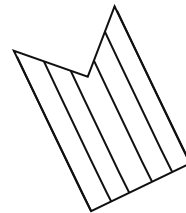
A



B



C

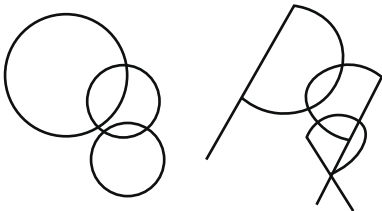


D



E

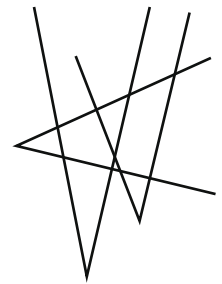
4



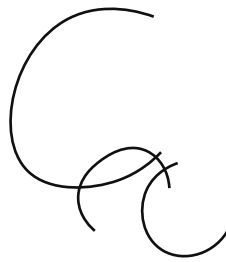
A



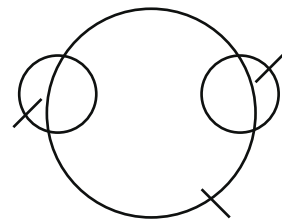
B



C

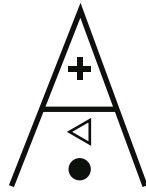
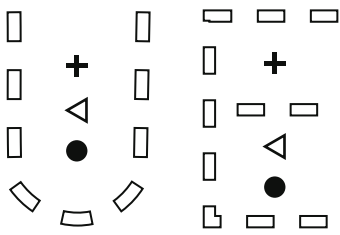


D

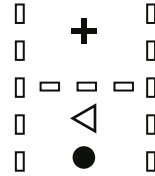


E

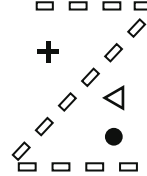
5



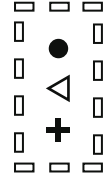
A



B



C

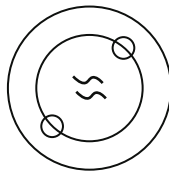
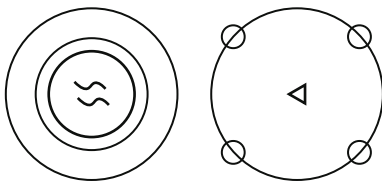


D

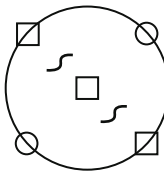


E

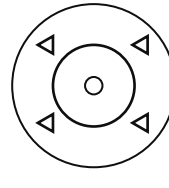
6



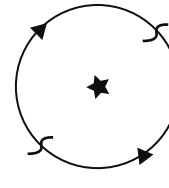
A



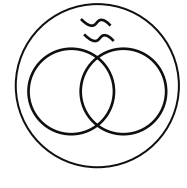
B



C

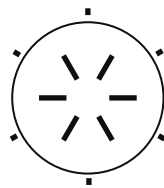
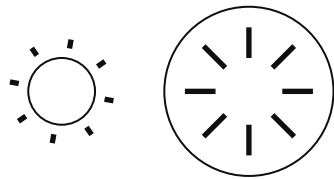


D



E

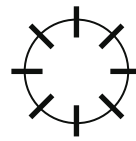
7



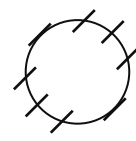
A



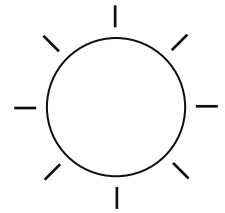
B



C

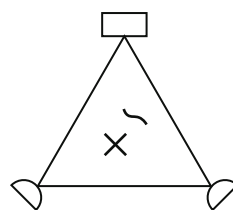
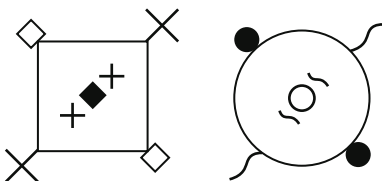


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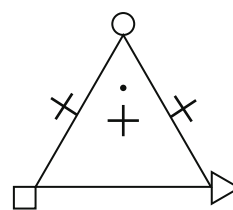


E

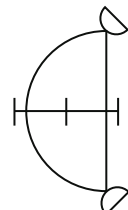
8



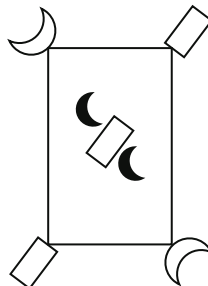
A



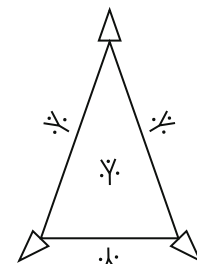
B



C



D

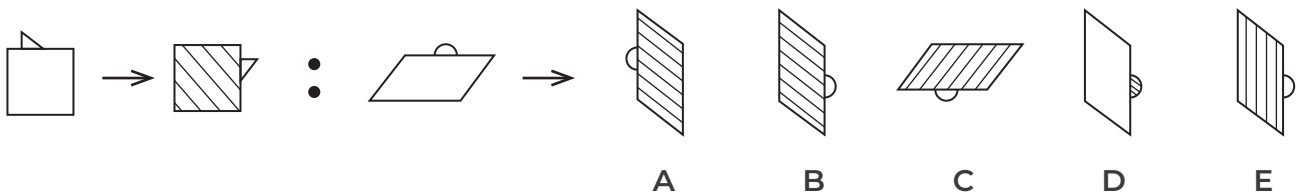


E

Section 3

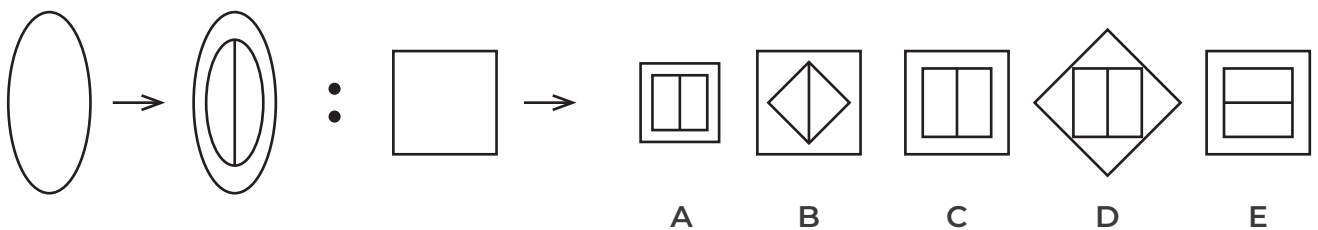
Make A Pair:

In the example below are two shapes with an arrow between them shown on the left. To answer the question, decide how the second shape is related to the first shape. After these there is a third shape beside an arrow and then five more shapes. Decide which of the five shapes goes with the third one to **make a pair in the same way** as the two on the left. Mark this letter on your answer sheet.



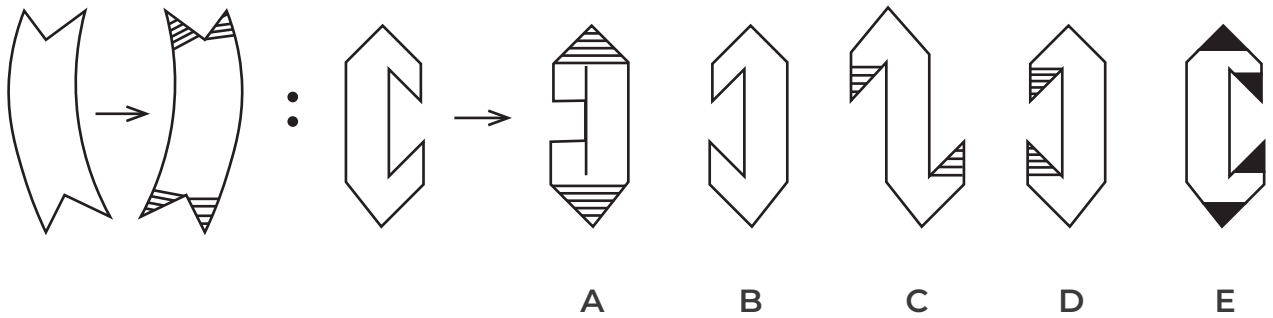
In the example above the answer is option B. The shape is rotated 90 degrees clockwise and the larger shape becomes striped.

Now look at the second example below.

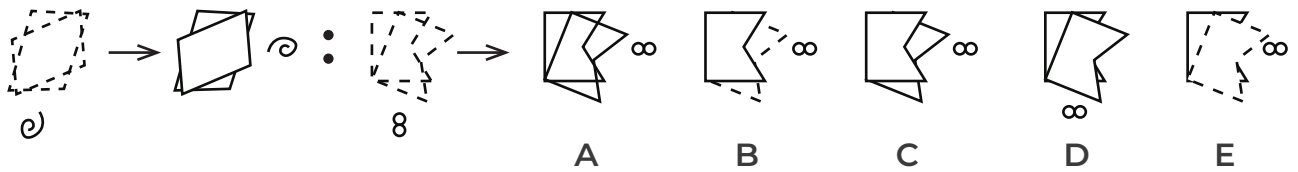


In the example above the answer is option C. A smaller square is placed inside the original square with a vertical line down the middle of the inner square.

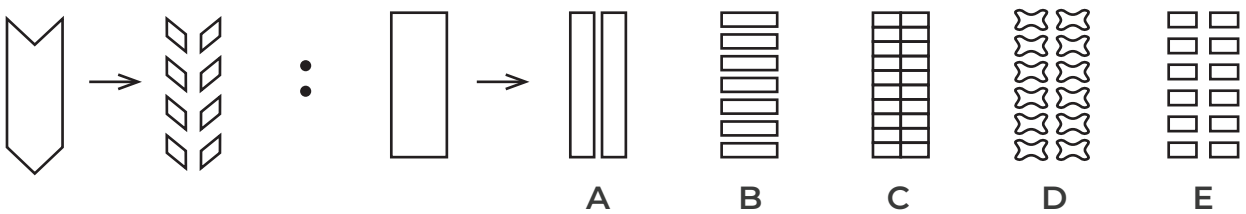
41



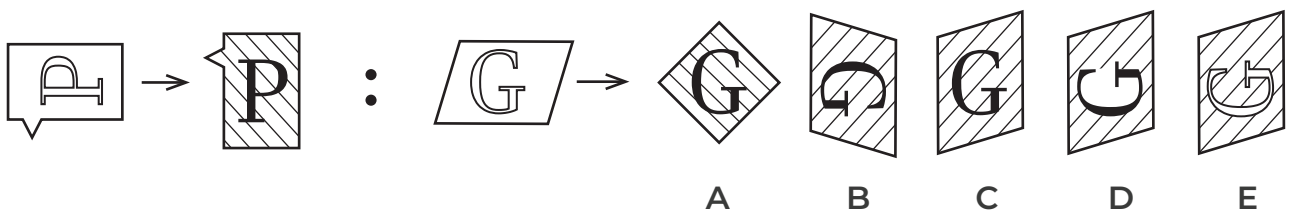
42



43



44





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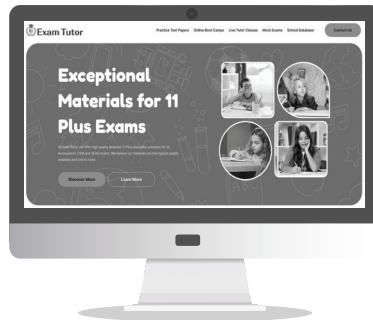
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CEM 11+

VERBAL REASONING PAPER 1

2026 EDITION

Time 60 Minutes



Visit www.examtutor.co.uk for Tutor video explanations for every question in this practice paper.

Name: _____

Score= _____ /50 Percentage = _____

In these questions, the same letter must be used in both sets of brackets, to finish the word before the brackets and begin the word following after the brackets. Find the letter and mark it on the answer sheet.

Example: brea [?] awn alou [?] eafen

A y **B** l **C** d **D** k **E** r

Answer: letter d (The four words are **bread, dawn, aloud** and **deafen**).

1

tou [?] ice alta [?] ail

A b **B** n **C** s **D** r **E** l

2

flo [?] ain scoo [?] etal

A p **B** m **C** r **D** t **E** w

3

nin [?] leven eas [?] ight

A y **B** t **C** e **D** l **E** f

4

rio [?] eal bea [?] ame

A d **B** s **C** m **D** t **E** n

5

dis [?] age chi [?] ome

A k **B** h **C** r **D** p **E** c

Find two words below for each question, select one word from each group, to complete the sentence. Select the best matching option. Mark both words on the answer sheet.

Example: **Ferry** is to (boat water engine) as **car** is to (travel miles road).

- | | |
|-----------------|-----------------|
| A boat | X travel |
| B water | Y miles |
| C engine | Z road |

Answer: **water** **road**

19 **Lazy** is to (helpless aggressive assertive) as **charming** is to (shallow repulsive confident).

- | | |
|---------------------|--------------------|
| A helpless | X shallow |
| B aggressive | Y repulsive |
| C assertive | Z confident |

20 **Thermometers** are to (cold temperature weather) as **measuring cylinders** are to (area depth volume).

- | | |
|----------------------|-----------------|
| A cold | X area |
| B temperature | Y depth |
| C weather | Z volume |

21 **Ignorant** is to (educated deprived selective) as **cherish** is to (treasure neglect rescue).

- | | |
|--------------------|-------------------|
| A educated | X treasure |
| B deprived | Y neglect |
| C selective | Z rescue |

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

The alphabet shown above may be used to help you complete these questions.
Find the next pair letters in the sequence by following the same pattern shown for each question. Mark your answer on the answer sheet.

Example: **AZ** **BY** **CX** **DW** **[?]**

A FR **B** UE **C** EU **D** FV **E** EV

Answer: **EV**

25 HI GE JK IG LM **[?]**

A KI **B** JK **C** MK **D** JI **E** KH

26 ED HH FE II **[?]**

A IH **B** GF **C** JJ **D** GH **E** II

27 YZ ZW WX XU UV **[?]**

A VS **B** VT **C** US **D** VR **E** TU

28 BE DC IL KJ PS RQ **[?]**

A TW **B** VU **C** VY **D** YX **E** WZ

In these questions, the same letter must be used in both sets of brackets, to finish the word before the brackets and begin the word following after the brackets. Find the letter and mark it on the answer sheet.

Example: (up hill reach) (next load close)

A up

X next

B hill

Y load

C reach

Z close

Answer: up load

44

(water heat hose)

(freeze down log)

A water

X freeze

B heat

Y down

C hose

Z log

45

(hold cross line)

(fire side end)

A hold

X fire

B cross

Y side

C line

Z end

46

(comb time out)

(work at wear)

A comb

X work

B time

Y at

C win

Z wear

Answer Sheet

Please Mark boxes with a thin horizontal line like this 

1

A

☐

B

☐

C

☐

D

☐

E

☐

2

A

☐

B

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C

☐

D

☐

E

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3

A

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C

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