Question 1
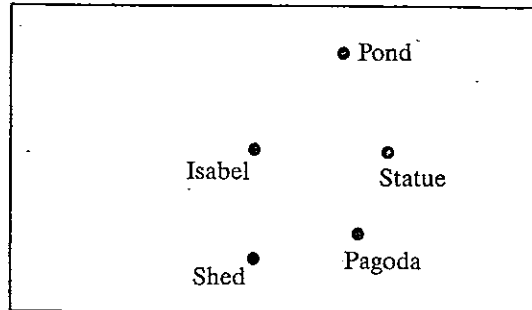
Isabel is standing in the garden facing West. She turns through 225° in a clockwise direction.

What feature is she now facing?
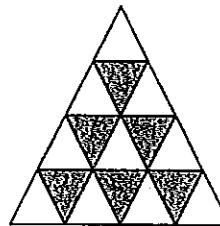
Pond

Isabel   Statue

Shed   Pagoda

N

Circle the correct answer.

A   Statue   B   Shed   C   Pagoda   D   Pond

Question 2

What fraction of the diagram is shaded?

A $\dfrac{1}{2}$ B $\dfrac{3}{5}$ C $\dfrac{6}{13}$ D $\dfrac{3}{8}$

Question 3

Corey wrote out the first four numbers in a pattern:

46, 37, 28, 19.

What is the next number in the pattern?

Write your answer in the box.

Question 4

1 cm and 50 mm is the same as

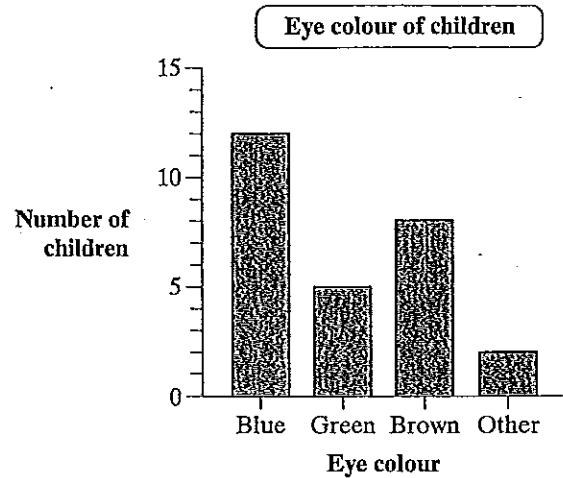A   1.5 cm.   B   15 cm.   C   15 mm.   D   6 cm.

Question 5

Anjuli recorded the eye colour of the children in her class in a table.

Eye colour	Blue	Green	Brown	Other
Number	12	5	9	2

She drew a graph to show the information.

Eye colour of children

With which eye colour did Anjuli made a mistake in the graph?

   A Blue   **B** Green   **C** Brown   **D** Other

Question 6

A box holds 60 ribbons. 16 of the ribbons are pink.

The fraction of pink ribbons in the box is closest to

   A $\dfrac{1}{3}$ **B** $\dfrac{1}{4}$ **C** $\dfrac{1}{5}$ **D** $\dfrac{1}{6}$
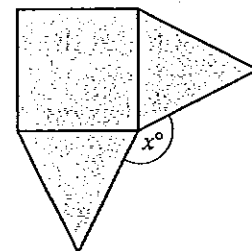
Question 7

When 9 is added to a certain number and the result multiplied by 5, the answer is 185.

What was the number?

Write your answer in the box.

Question 8

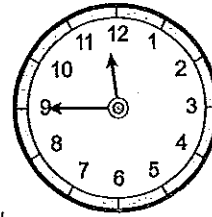This figure is made up of a square and 2 equilateral triangles.

What is the value of x in the diagram?

   A 210   **B** 150   **C** 140   **D** 120

Question 9

Julia arrived at the station and saw this clock.
Her train departed at 12:10.

How long did Julia spend at the station?
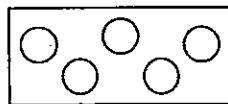
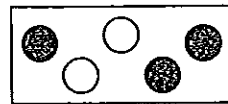|							
A	5 min	**B**	25 min	**C**	1 h 12 min	**D**	3 h 10 min

Question 10

Vincent correctly described the chance of choosing a blue button from a tin of buttons as 'Unlikely, but not impossible'. Which could be Vincent's tin?
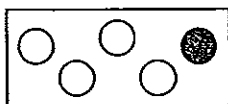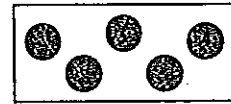
| **A** | **B** | **C** | **D** |

Question 11

This pattern of pentagons has been made with matches.

Which is the correct rule for finding the number of matches?

    A   5 times the number of pentagons

    B   4 times the number of pentagons + 1

    C   3 times the number of pentagons + 2

    D   2 times the number of pentagons + 3

Question 12

A butcher has 1.3 kg of mince on a tray. She sells 750 g. How many grams of the mince remain on the tray?

Write your answer in the box.   g

Question 13

A cyclist rode from Eaglevale to Sandy Beach in 45 minutes. Her average speed was 16 kilometres per hour. How far is it from Eaglevale to Sandy Beach?

Write your answer in the box.

km

Question 14

These numbers form a pattern, but one number is missing.

1, 3, 7, 15, ?, 63, 127, 255

What is the missing number?

Write your answer in the box.

Question 15

Saxon had an average (mean) mark of 79 for his first 3 tests. In his fourth test he scored 87. What was his new average?

A 81   B 82   C 83   D 84

Question 16

What is the value of $\dfrac{19.72 - 16.8}{0.16 - 0.08}$?
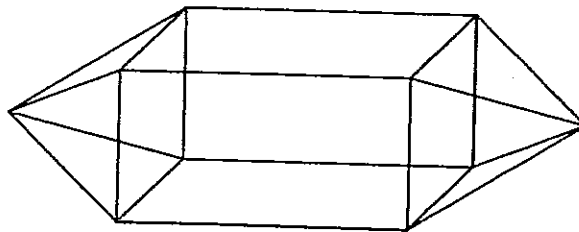
A 85.36   B 190.28   C 18.17   D 36.5

Question 17

Quentin has made an object by sticking 2 rectangular pyramids to the ends of a rectangular prism. How many edges has Quentin's object?

A 12   B 16   C 20   D 28

Question 18

Theo knows that a particular triangle is isosceles and has one angle of 40°. He also knows the size of a second angle of the triangle. Which could **not** be the size of the second angle?
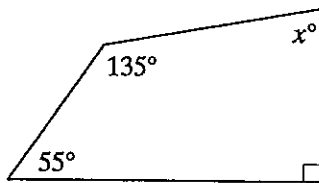
A   40°   B   70°   C   80°   D   100°

Question 19

$36 \times \square = 16$. What is the value of $\square$?

A $\dfrac{4}{9}$ B $\dfrac{2}{3}$ C $\dfrac{3}{4}$ D $\dfrac{9}{2}$

Question 20

What is the value of x in this diagram?

A   80   B   90   C   100   D   110

Question 21

Mei built an object with identical cubes. She drew three different views of it.
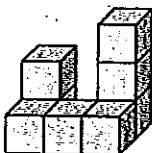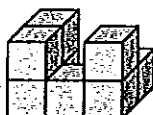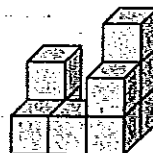

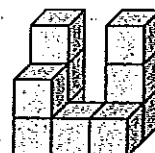Front view   Right side view   Top view

Which could be the object Mei built?

A   B   C   D

Question 22

Drew bought a jacket during this sale.
If the marked price of the jacket was $180,
how much did Drew pay?

SALE!
15% off all marked prices

A $27   B $83   C $153   D $165

Question 23

These 3 rectangular prisms have been drawn on an isometric grid.
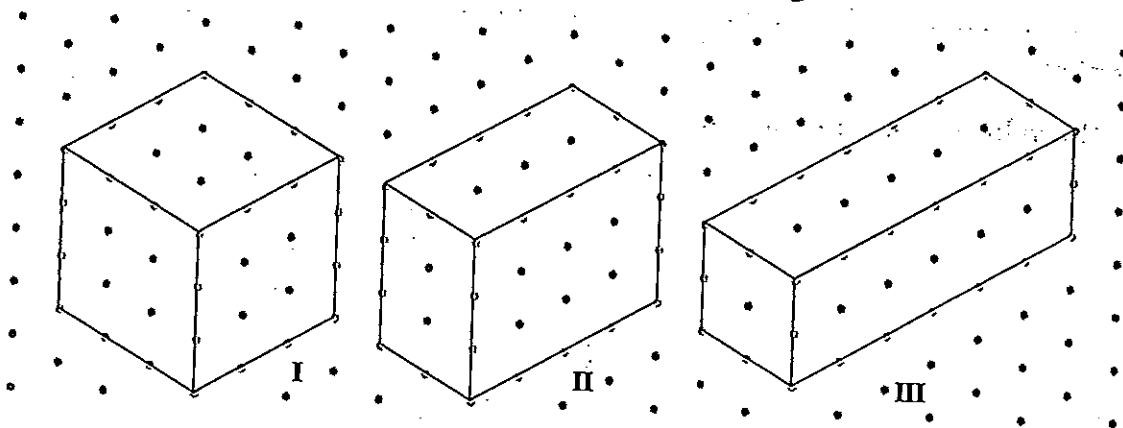
Which have the same volume?

A   I and II only   B   I and III only   C   II and III only   D   I, II and III

Question 24

On a map, 1 cm represents 15 km. The distance between Clifton and Underwood is actually 72 km. How far apart will they appear on the map?

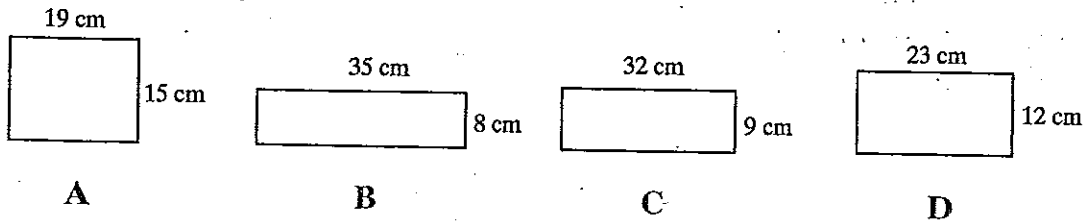Write your answer in the box.

[   ] cm

Question 25

There are 560 adults on a cruise. The ratio of men to women is 3 to 5. How many women are on the cruise?

A   210   B   224   C   336   D   350

Question 26

Which rectangle has the smallest area?

19 cm / 15 cm	35 cm / 8 cm	32 cm / 9 cm	23 cm / 12 cm
A	**B**	**C**	**D**

Question 27

Dane's car uses petrol at the rate of 8 litres per 100 km travelled.

How far would Dane's car travel on a full tank of 70 litres of petrol?

Write your answer in the box.   ⬚ km
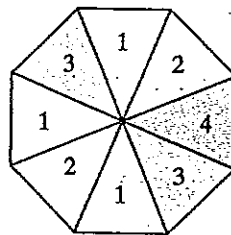
Question 28

At 8:40 pm, Hui begins to watch a movie. The movie runs for 1 hour and 50 minutes.

At what time will it finish?

   A 9:45 pm   B 9:54 pm   C 10:10 pm   D 10:30 pm

Question 29

Imogen spun this spinner 40 times.

Which table is most likely to show the result?

Score	Times
1	10
2	10
3	10
4	10

A

Score	Times
1	5
2	10
3	10
4	15

B

Score	Times
1	15
2	10
3	10
4	5

C

Score	Times
1	13
2	7
3	7
4	18

D

Question 30

Wei wants to spread some fertiliser at the rate of 50 kg per acre.
Wei uses this graph to change acres to hectares.

Conversion of acres to hectares
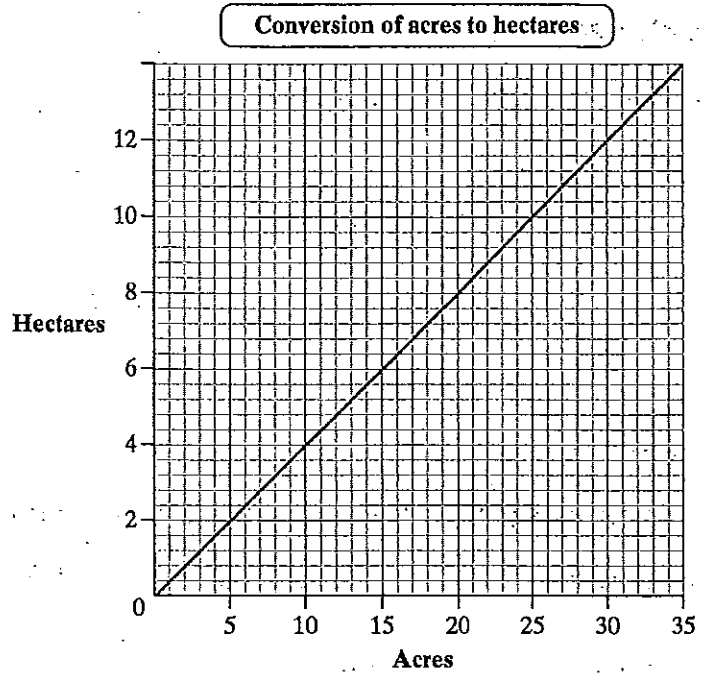
About how many kilograms of fertiliser does he need for a 3-hectare paddock?

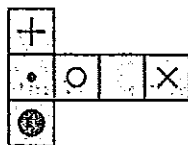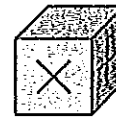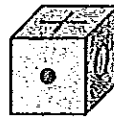A   150   B   375   C   745   D   1000

Question 31

Opal used the rule 'Multiply the previous number by itself and add 5' to get the numbers in a pattern. The first number was 1. What was the fourth number?
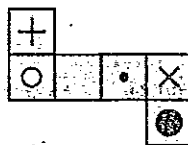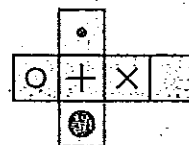
Write your answer in the box.

Question 32

Here are two views of the same cube.
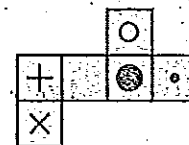Which could be the net of the cube?

A   B   C   D

END OF TEST 6

|			
1 B (Basic level)	**17 C** (Intermediate level)		
2 D (Basic level)	**18 C** (Advanced level)		
3 10 (Basic level)	**19 A** (Advanced level)		
4 D (Basic level)	**20 A** (Advanced level)		
5 C (Basic level)	**21 A** (Advanced level)		
6 B (Intermediate level)	**22 C** (Intermediate level)		
7 28 (Intermediate level)	**23 C** (Advanced level)		
8 B (Intermediate level)	**24 4.8 cm** (Intermediate level)		
9 B (Basic level)			
10 A (Basic level)	**25 D** (Intermediate level)		
11 B (Intermediate level)	**26 D** (Intermediate level)		
12 550 g (Intermediate level)	**27 875 km** (Advanced level)		
13 12 km (Intermediate level)	**28 D** (Intermediate level)		
14 31 (Intermediate level)	**29 C** (Advanced level)		
15 A (Intermediate level)	**30 B** (Advanced level)		
	31 1686 (Advanced level)		
16 D (Basic level)	**32 A** (Advanced level)		

1 Isabel was facing West. A turn through 180° would mean she is facing East. Another 45° in a clockwise direction would mean she is facing South-East.
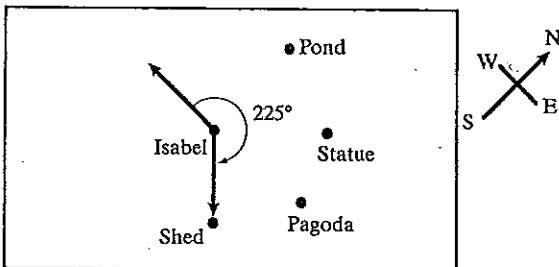
The feature that Isabel is facing is the shed.

2 The triangle is divided into 16 smaller triangles. 6 of those smaller triangles are shaded.
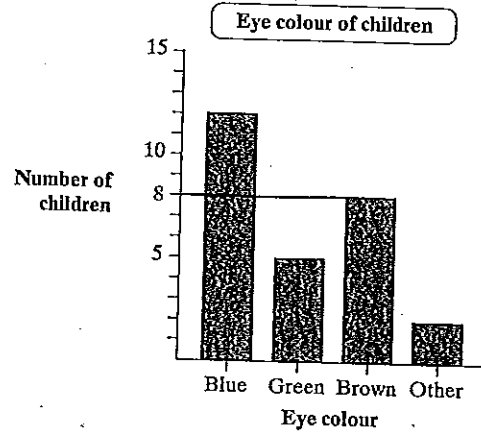

$$\text{Fraction shaded} = \frac{6}{16}$$
$$= \frac{3}{8}$$
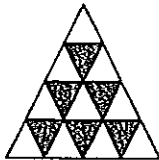
3 46, 37, 28, 19.
46 − 37 = 9
37 − 28 = 9
28 − 19 = 9
The numbers are decreasing by 9 each time.
Next number = 19 − 9
= 10

4 10 mm = 1 cm
So 50 mm = 5 cm
1 cm + 50 mm = 1 cm + 5 cm
= 6 cm

5 The graph should show 9 children with brown eyes but shows 8 children.

Eye colour	Blue	Green	Brown	Other
Number	12	5	9	2

The eye colour with which Anjuli made a mistake is Brown.

6 16 of 60 ribbons are pink.
Consider the options:
$$\frac{1}{3} \text{ of } 60 = 60 \div 3$$
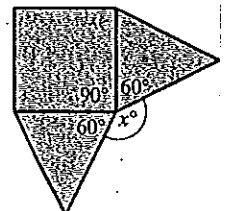$$= 20$$
$$\frac{1}{4} \text{ of } 60 = 60 \div 4$$
$$= 15$$
$$\frac{1}{5} \text{ of } 60 = 60 \div 5$$
$$= 12$$
$$\frac{1}{6} \text{ of } 60 = 60 \div 6$$
$$= 10$$
Of the choices, 16 is closest to 15. So the fraction of pink ribbons is closest to $\frac{1}{4}$.

7 After multiplying by 5, the answer was 185.
Before multiplying by 5, the number was 185 ÷ 5 or 37.
Before adding 9, the number was 37 − 9 or 28.

8 Each angle of a square = 90°.
Each angle of an equilateral triangle = 60°.

Angles at a point add to 360°.
So x + 60 + 90 + 60 = 360
x + 210 = 360
x = 360 − 210
x = 150

9 The clock shows a quarter to twelve or fifteen minutes to twelve.
Julia must wait 15 minutes to twelve o'clock and 10 minutes after twelve o'clock.
Waiting time = (15 + 10) min
= 25 min

10 Vincent's tin must be A as there is only 1 blue button out of 5 in this tin so the chance of choosing a blue button could be described as unlikely.

The chance of a blue button would be described as impossible in B, likely in C and certain in D.

11

A table can be drawn up to show the number of matches needed for different numbers of pentagons.

Number of pentagons	1	2	3	4
Number of matches	5	9	13	17

The number of matches increases by 4 each time.
So try the rule '4 times the number of pentagons + 1'.
When there is 1 pentagon,
$$\text{Number of matches} = 4 \times 1 + 1$$
$$= 4 + 1$$
$$= 5 \quad \checkmark$$
When there are 2 pentagons,
$$\text{Number of matches} = 4 \times 2 + 1$$
$$= 8 + 1$$
$$= 9 \quad \checkmark$$
When there are 3 pentagons,
$$\text{Number of matches} = 4 \times 3 + 1$$
$$= 12 + 1$$
$$= 13 \quad \checkmark$$
When there are 4 pentagons,
$$\text{Number of matches} = 4 \times 4 + 1$$
$$= 16 + 1$$
$$= 17 \quad \checkmark$$
The correct rule to find the number of matches is '4 times the number of pentagons + 1'.

12 $1 \text{ kg} = 1000 \text{ g}$
So $1.3 \text{ kg} = 1300 \text{ g}$
$$\text{Amount of meat remaining} = (1300 - 750) \text{ g}$$
$$= 550 \text{ g}$$

13 45 minutes is $\frac{3}{4}$ of an hour.
In one hour the cyclist travels 16 km.
So in $\frac{3}{4}$ h the cyclist travels $\frac{3}{4}$ of 16 km or 12 km.
The distance from Eaglevale to Sandy Beach is 12 km.

14 $1, 3, 7, 15, ?, 63, 127, 255$
The numbers in the pattern are found by the rule 'Double the number and add 1'.
$$\text{Missing number} = 2 \times 15 + 1$$
$$= 30 + 1$$
$$= 31$$
[Check: Next number $= 2 \times 31 + 1$
$$= 62 + 1$$
$$= 63 \quad \checkmark]$$
The missing number is 31.

15 Average from 3 tests $= 79$
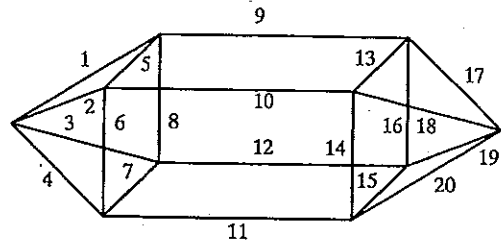$$\text{Total marks from 3 tests} = 3 \times 79$$
$$= 237$$
$$\text{Total marks from 4 tests} = 237 + 87$$
$$= 324$$
$$\text{Average of 4 tests} = 324 \div 4$$
$$= 81$$

16 $\dfrac{19.72 - 16.8}{0.16 - 0.08} = \dfrac{2.92}{0.08}$
$$= 36.5$$

17 The object has 20 edges.

18 The triangle is isosceles so it must have 2 equal angles. The angles of a triangle add to 180°.
Consider the options.
Second angle 40°:
The triangle would have 2 angles of 40° so it would be isosceles.
Second angle 70°:
$$\text{Sum of 2 angles} = 40° + 70°$$
$$= 110°$$
$$\text{Remaining angle} = 180° - 110°$$
$$= 70°$$
The triangle would have 2 angles of 70° so it would be isosceles.
Second angle 80°:
$$\text{Sum of 2 angles} = 40° + 80°$$
$$= 120°$$
$$\text{Remaining angle} = 180° - 120°$$
$$= 60°$$
The triangle would have 3 different angles so it would not be isosceles.
Second angle 100°:
$$\text{Sum of 2 angles} = 40° + 100°$$
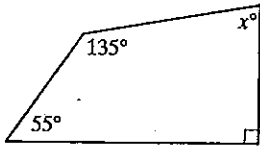$$= 140°$$
$$\text{Remaining angle} = 180° - 140°$$
$$= 40°$$
The triangle would have 2 angles of 40° so it would be isosceles.
The size of the second angle cannot be 80°.

19 $36 \times \square = 16$

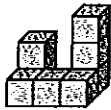$\square = 16 \div 36$

$\quad = \dfrac{16}{36}$

$\quad = \dfrac{4}{9}$

[Or try each option to see which fraction will give 16 when multiplied by 36.]

20 Angles of a quadrilateral add to 360°.

$x + 135 + 55 + 90 = 360$

$x + 280 = 360$

$x = 360 - 280$

$x = 80$

21 From the right side view, the blocks are just one high in the front row. The only possible option is A.

22 Saving = 15% of $180

Now 10% of $180 = $18

5% is half of 10%.

So 5% of $180 = $9

15% of $180 = $18 + $9

$\quad = \$27$

Drew saved $27.

Price paid = $180 − $27

$\quad = \$153$

23 Prism I is 3 by 3 by 3.

Volume in cubic units = $3 \times 3 \times 3$

$\quad = 27$

Prism II is 4 by 3 by 2.

Volume in cubic units = $4 \times 3 \times 2$

$\quad = 24$

Prism III is 6 by 2 by 2.

Volume in cubic units = $6 \times 2 \times 2$

$\quad = 24$
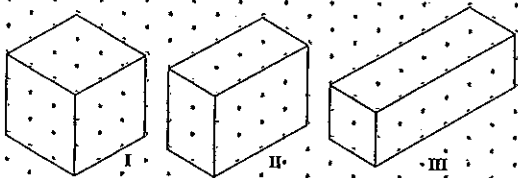
Prisms II and III have the same volume.

24 1 cm represents 15 km.

From Clifton to Underwood = 72 km

[To find the distance on the map you need to know how many lots of 15 km there are in 72 km.]

Distance on map = $(72 \div 15)$ cm

$\quad = 4.8$ cm

25 The ratio of men to women is 3 to 5 so out of every 8 adults, 5 are women.
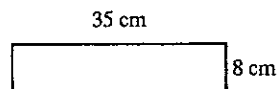
Now $560 \div 8 = 70$

So there are 70 lots of 8 adults.

Number of women = 5×70

$\quad = 350$

26 Find the area of each rectangle.

A: Area = 19 cm × 15 cm

$\quad = 285 \text{ cm}^2$
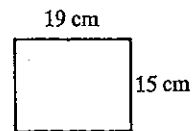
B: Area = 35 cm × 8 cm

$\quad = 280 \text{ cm}^2$

C: Area = 32 cm × 9 cm

$\quad = 288 \text{ cm}^2$
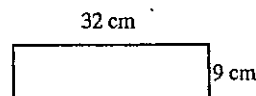
D: Area = 23 cm × 12 cm

$\quad = 276 \text{ cm}^2$
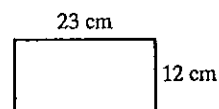
Rectangle D has the smallest area.

27 Dane's car uses 8 L/100 km.

So it uses 1 litre for every $(100 \div 8)$ km.

It uses 1 litre for every 12.5 km.

On 70 litres it will travel (70×12.5) km or 875 km.

28 The movie finishes one hour and 50 minutes after 8:40 pm.

One hour after 8:40 pm is 9:40 pm.

20 minutes after 9:40 pm is 10 pm.

Another 30 minutes after 10 pm is 10:30 pm.

Or 1 h 50 min is 10 minutes shorter than 2 hours. Two hours after 8:40 is 10:40.

Ten minutes before 10:40 is 10:30.

29 The spinner has eight sectors, three showing 1, two showing 2 and two showing 3, and one showing 4.

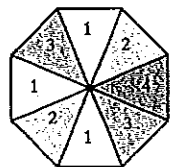So in every 8 spins you would expect to get three 1s, two 2s, two 3s and one 4.

Now $40 = 5 \times 8$

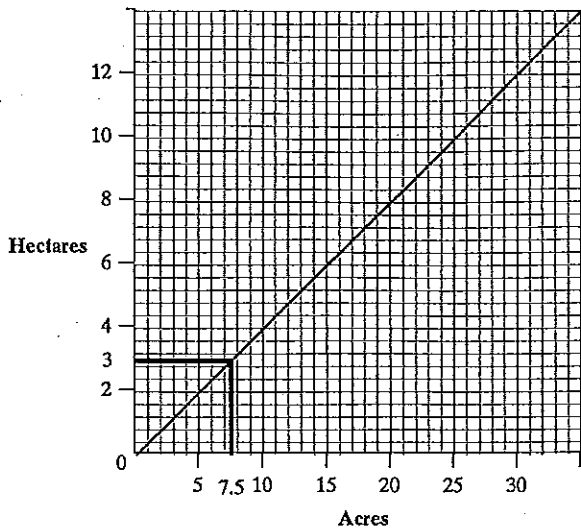So in 40 spins you would expect to get 5 times each of those results.

You would expect fifteen 1s, ten 2s, ten 3s and five 4s.

The correct option is C.

30 3 hectares is about 7.5 acres.

Conversion of acres to hectares

For each acre, 50 kg of fertiliser is required.

Amount of fertiliser = 7.5 × 50 kg

$\qquad\qquad\qquad\quad$ = 375 kg

31 First number = 1

Second number = 1 × 1 + 5

$\qquad\qquad\qquad$ = 1 + 5

$\qquad\qquad\qquad$ = 6

Third number = 6 × 6 + 5

$\qquad\qquad\qquad$ = 36 + 5

$\qquad\qquad\qquad$ = 41

Fourth number = 41 × 41 + 5

$\qquad\qquad\qquad\quad$ = 1681 + 5

$\qquad\qquad\qquad\quad$ = 1686

32 In both views of the cube, a total of 5 faces can be seen.

The face opposite the face showing + can't be seen in either view so it must be the face with the large dot.

So Option C cannot be the answer.

In the first view of the cube you can see that the small dot and the circle are next to each other.

So Option B cannot be the answer because it has the small dot and the circle on opposite faces.

Option D cannot be correct because if the small dot was at the front and the circle at the side, as in the first view, the large dot would be on the top face, not +.

The correct option is A.