

21 N is a number.

If 6 is subtracted from three times N , the result is 39.

Which equation matches this description?

$3N - 6 = 39$
A

$3(N - 6) = 39$
B

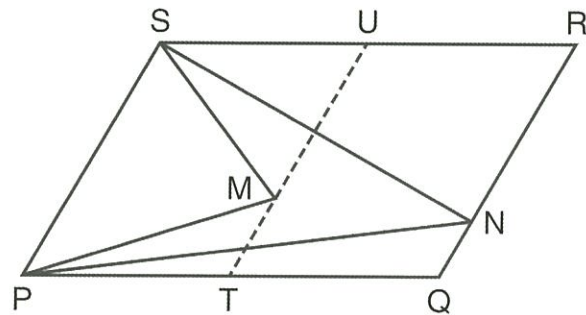
$6 - 3N = 39$
C

$3N = 39 - 6$
D

22 PQRS is a parallelogram.

T is the mid-point of PQ and U is the mid-point of RS.

N is any point on QR and M is any point on TU.



Which of these is **not** equal to the area of quadrilateral PMSN?

A area of triangle PMS

B $\frac{1}{2}$ area of triangle PNS

C $\frac{1}{2}$ area of parallelogram TQRU

D $\frac{1}{2}$ area of parallelogram PQRS

23 In a group of zebras, there are twice as many females as males.

10 more female zebras and 10 more male zebras are added to the group.

How does this affect the probability of selecting a male zebra at random from the new group?

A The probability increases.

B The probability decreases.

C The probability remains unchanged.

D There is not enough information to know.

24 $5 + \frac{-8 - -6}{4} = ?$

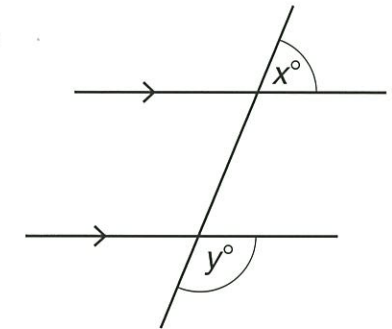
$8\frac{1}{2}$
A

$4\frac{1}{2}$
B

$1\frac{3}{4}$
C

$\frac{3}{4}$
D

25 Which statement about this diagram must be true?



$y = x$
A

$y = 90 - x$
B

$y = 90 + x$
C

$y = 180 - x$
D

26 This rule is used to convert between degrees Celsius ($^{\circ}\text{C}$) and degrees Fahrenheit ($^{\circ}\text{F}$).

$$C = \frac{5}{9}(F - 32)$$

What is the temperature in Fahrenheit when $C = -15^{\circ}$?

-59°
A

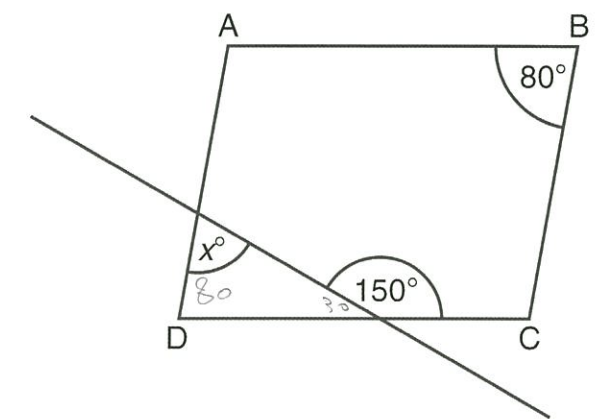
-26°
B

5°
C

31°
D

27 In this diagram, ABCD is a parallelogram.

What is the value of x ?



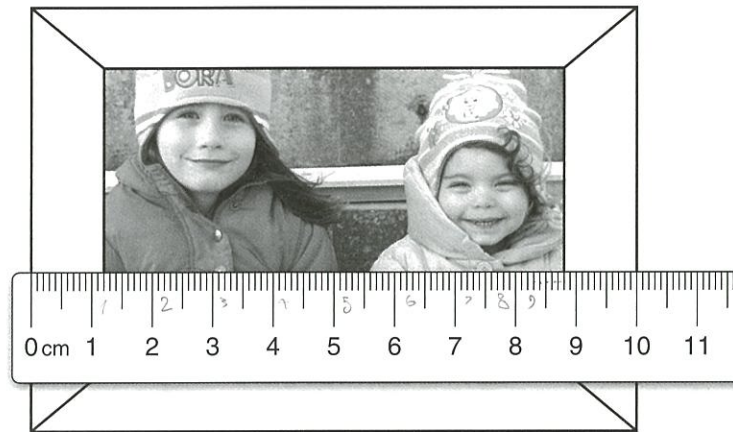
30
A

70
B

75
C

80
D

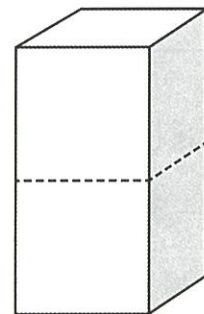
- 28 The frame for this photo is 10 cm wide.



What is the width of the photo?

- A 7.6 cm B 7.8 cm C 8.6 cm D 8.8 cm

- 29 This solid square-based prism has side lengths 10 cm, 10 cm and 20 cm. It is cut along the dotted line to form two cubes. What is the total surface area of the two cubes?

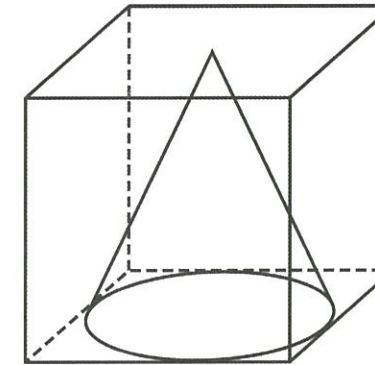


- A 900 cm² B 1000 cm² C 1100 cm² D 1200 cm²

- 30 Shaka and Ajani play a game. Shaka scores 30% of the maximum number of points. She misses the record by 15 points. Ajani scores 40% of the maximum number of points. She exceeds the record by 35 points. What is the maximum number of points in the game?

- A 50 B 100 C 200 D 500

- 19 This cone is placed inside a cube with side length 20 centimetres. The diameter of the cone is equal to the side length of the cube. The height of the cone is equal to the height of the cube.

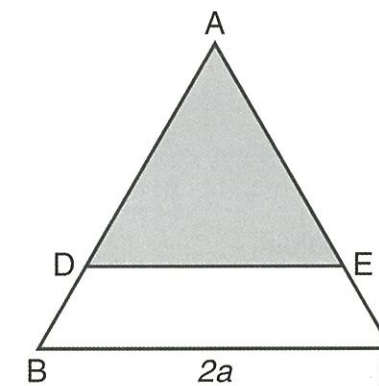


Volume of cone = $\frac{1}{3} \times \text{area of base} \times \text{height}$

Which calculation gives the volume of the cone in cubic centimetres?

- A $\frac{1}{3} \times 20^2 \times 20$
 B $\frac{1}{3} \times \left(\frac{20}{2}\right)^2 \times 20$
 C $\frac{1}{3} \times \pi \times 20^2 \times 20$
 D $\frac{1}{3} \times \pi \times \left(\frac{20}{2}\right)^2 \times 20$

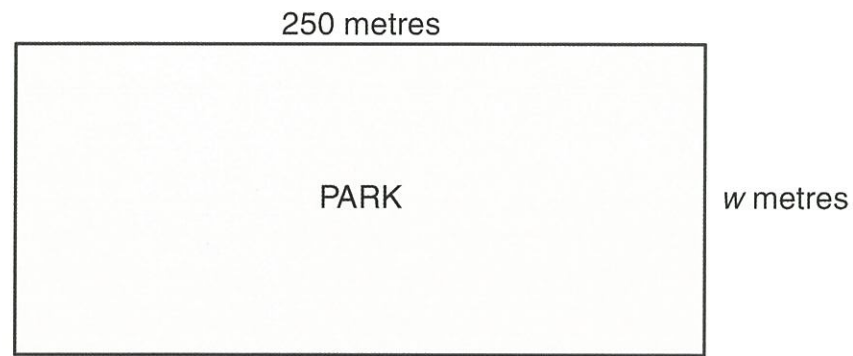
- 20 ABC and ADE are equilateral triangles.



The area of triangle ADE is half the area of triangle ABC. What is the length of DE?

- A $a\sqrt{2}$ B a C $\frac{a}{2}$ D $\frac{a}{4}$

- 16 The length of this rectangular park is 250 metres.
The perimeter of the park is P metres.



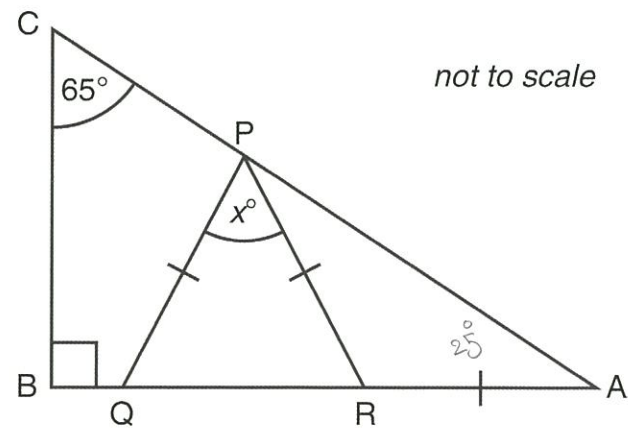
Which calculation **cannot** give the width (w) of the park in metres?

$w = \frac{P}{2} - 125$ $w = \frac{P}{2} - 250$ $w = \frac{1}{2}(P - 500)$ $w = \frac{P - 500}{2}$
A **B** **C** **D**

- 17 In a game, John rolls a fair six-sided dice and tosses a fair coin.
What is his probability of getting a 3 and a tail?

$\frac{1}{6}$ $\frac{1}{8}$ $\frac{2}{3}$ $\frac{1}{12}$
A **B** **C** **D**

- 18 Line segments AR, PQ and PR are of equal length.



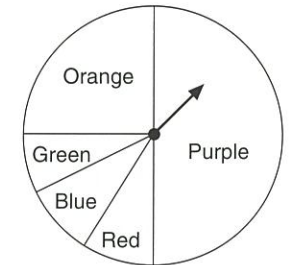
What is the value of x ?

25 50 77.5 80
A **B** **C** **D**

- 31 Which of these expressions is equivalent to $2^{(2x+1)}$?

$2^{2x} + 2$ $2^{2x} \times 2$ $2^{2x} + 1$ $2^{2x} \times 1$
A **B** **C** **D**

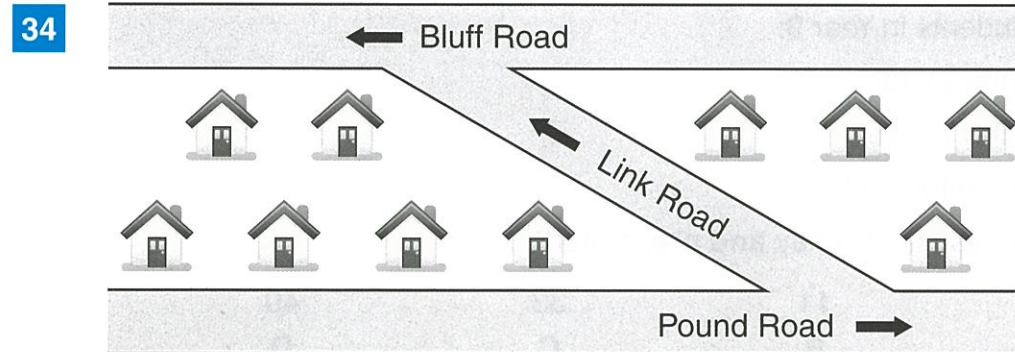
- 32 The spinner is for Mahmoud's new game.
Out of 600 spins, approximately how many times should he expect the arrow to land on the red sector?



30 40 50 60
A **B** **C** **D**

- 33 The perimeter of a square is 36 cm.
What is the area of this square?

81 cm^2 36 cm^2 24 cm^2 18 cm^2
A **B** **C** **D**



- 34

Pound Road and Bluff Road run parallel to each other.
A car turns left from Pound Road into Link Road.
The car turns through an angle of 150° .
The car then turns left from Link Road into Bluff Road.
Through what angle will the car turn?

30° 60° 150° 210°
A **B** **C** **D**

35 There are 10 red, 8 blue and 4 white buttons in a bag.
What is the chance of taking out either a blue button or a white button?

- $\frac{4}{22}$ $\frac{8}{22}$ $\frac{10}{22}$ $\frac{12}{22}$
A **B** **C** **D**

36 At a football match, 35% of the crowd were children.
What fraction of the crowd were children?

- $\frac{3}{5}$ $\frac{7}{20}$ $\frac{7}{25}$ $\frac{5}{70}$
A **B** **C** **D**

37 $0.2^3 =$

- 0.6 0.8 0.006 0.008
A **B** **C** **D**

38 Out of the 35 students in Year 9:

- 22 students play guitar
- 18 students play hockey
- 2 students do neither activity.

How many students play hockey **and** play guitar?

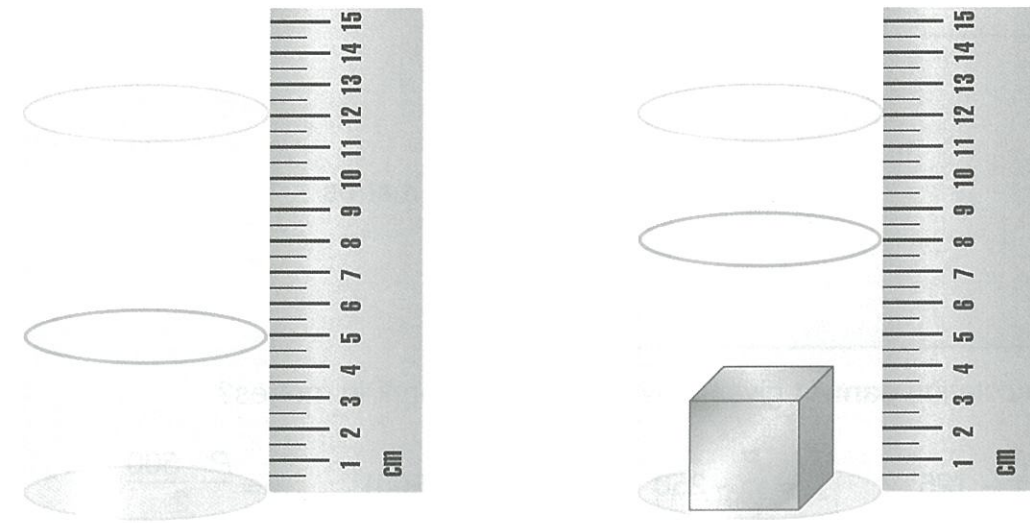
- 7 11 33 40
A **B** **C** **D**

39 Points *A*, *B* and *C* lie on a line and *B* is between *A* and *C*.

If $AB = 10$ cm and $BC = 5.2$ cm, what is the distance between the midpoints of AB and BC ?

- 2.4 cm 2.6 cm 5.0 cm 7.6 cm
A **B** **C** **D**

13 A cylinder containing water has a radius of 2 cm.
A solid metal cube is completely immersed in the water as shown.



What is the volume of the metal cube?

- $3\pi \text{ cm}^3$ $9\pi \text{ cm}^3$ $12\pi \text{ cm}^3$ $32\pi \text{ cm}^3$
A **B** **C** **D**

14 There is a 16 litre mixture of milk and water.

The ratio of milk to water is 5 : 3.

How much **more** milk should be added to the mixture to make the ratio of milk to water equal 2 : 1?

- $\frac{1}{4}$ litre 1 litre 2 litres 10 litres
A **B** **C** **D**

15 A 20 litre solution is 85% paint and 15% thinner.

Five litres of thinner is added to this solution.

What percentage of the new solution is **paint**?

- 25% 68% 80% 85%
A **B** **C** **D**

9 This is what students say about the quadrilateral on the right:

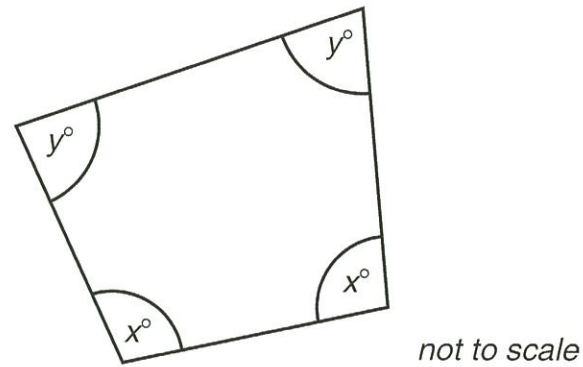
Amy – It must be a parallelogram.

Lara – It must be a trapezium.

John – It must be cyclic.

Jamal – It must be a rhombus.

Who is correct?



Amy only
A

John only
B

Lara and John
C

John and Jamal
D

10 This is the number of goals scored by Zola in 9 hockey matches.

6, 0, 3, 7, 3, 0, 6, 5, 6

What is the median number of goals scored?

6
A

5
B

4
C

3
D

11 Here is the rule of a game where a fair coin is tossed:

If you get a head, you must toss the coin again. If you get a tail, you must stop.

What is the probability of getting two tails?

0
A

$\frac{1}{4}$
B

$\frac{1}{2}$
C

$\frac{3}{4}$
D

12 These are points scored by a water polo team in 9 matches.

8, 12, a , 15, a , a , 22, 14, 13

The average score for the team for all the matches is 15.

What is the value of a ?

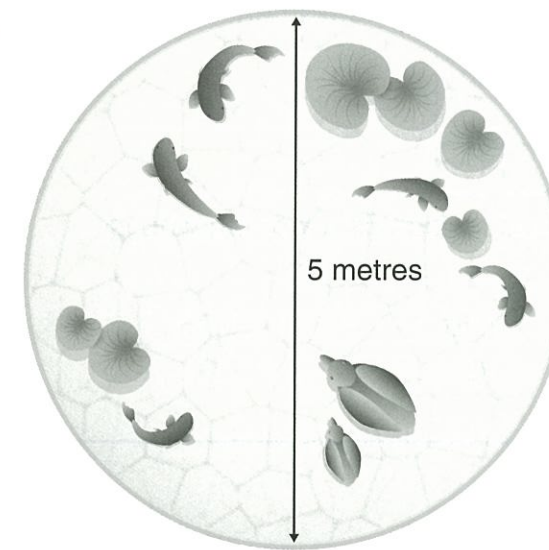
6
A

15
B

17
C

51
D

40



What is the circumference of this pond to the nearest metre?

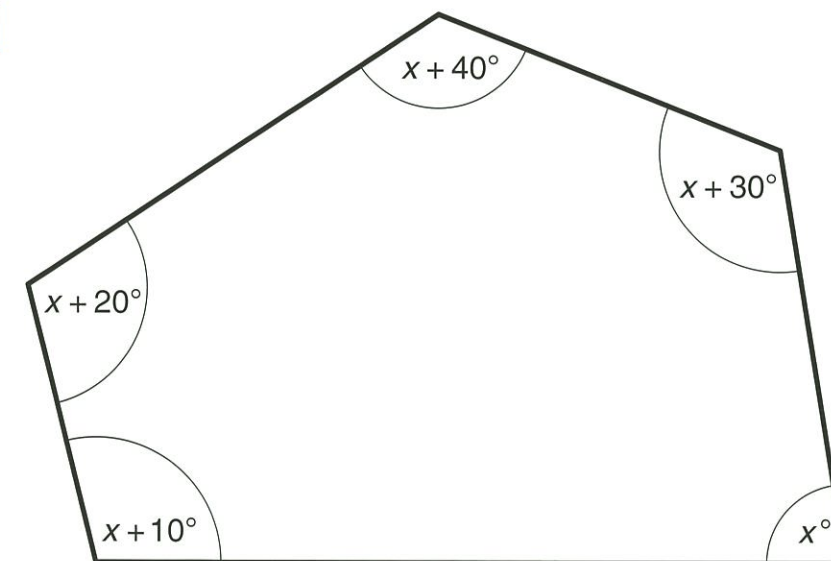
16 metres
A

20 metres
B

32 metres
C

79 metres
D

41



What is the value of x ?

70
A

80
B

85
C

88
D

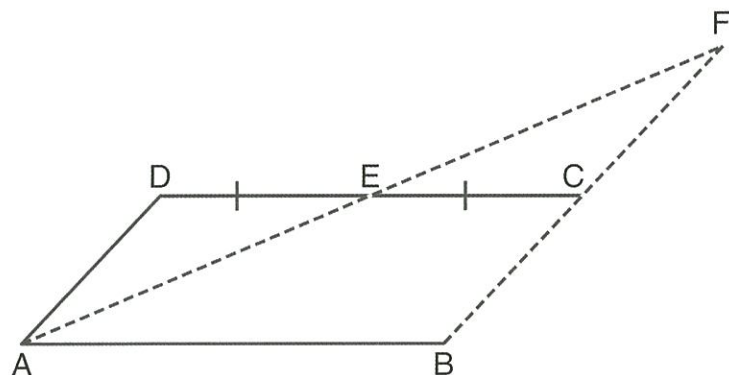
42 The table shows the dietary habits of a group of men and women.

	Vegetarian	Not vegetarian
Men	5	17
Women	15	13

What is the probability that a person chosen at random is a woman who is vegetarian?

- 0.15 0.30 0.56 0.75
A **B** **C** **D**

43 ABCD is a parallelogram. E is the mid-point of CD. AE and BC when extended meet at point F.



How does the area of triangle ABF compare with the area of parallelogram ABCD?

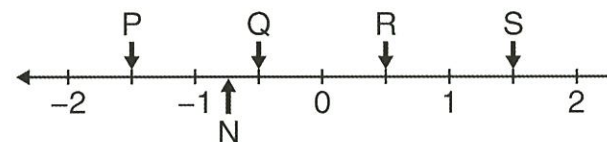
- A** The area of the triangle is smaller.
B The area of the triangle is greater.
C The area of the triangle is the same as the parallelogram.
D There is not enough information to determine the areas.

44 The base of a prism has three edges.

How many faces does it have?

- 4 5 6 9
A **B** **C** **D**

5 N is a number marked on this number line.



Where will N^2 be on the number line?

- point P point Q point R point S
A **B** **C** **D**

6 AD is a straight line segment.

The ratio of the lengths of AB to BC is 1 : 2

The ratio of the lengths of BC to CD is 8 : 5



not to scale

What is the ratio of AB to CD?

- 1 : 5 4 : 5 3 : 13 9 : 7
A **B** **C** **D**

7 A woman takes \$3000 on a vacation and spends \$150 each day.

Which expression gives the amount she has in dollars after n days?

- $150n$ $2850n$ $3000 + 150n$ $3000 - 150n$
A **B** **C** **D**

8 Ali rides a bicycle for one hour.

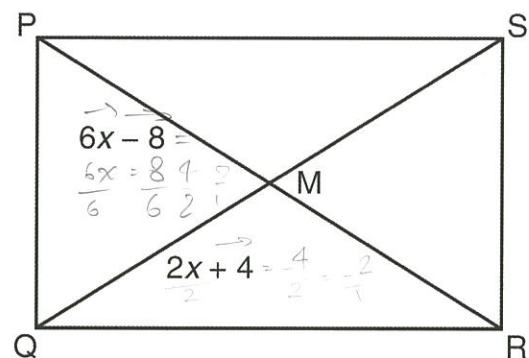
For the first 20 minutes his average speed is 18 km/h.

For the next 40 minutes his average speed is 15 km/h.

What is his overall average speed?

- 16 km/h 16.5 km/h 17 km/h 17.5 km/h
A **B** **C** **D**

- 1** PQRS is a rectangle.
The lengths of PM and QM are shown in the diagram.
What is the value of x ?



- $\frac{1}{2}$ 1 3 8
A **B** **C** **D**

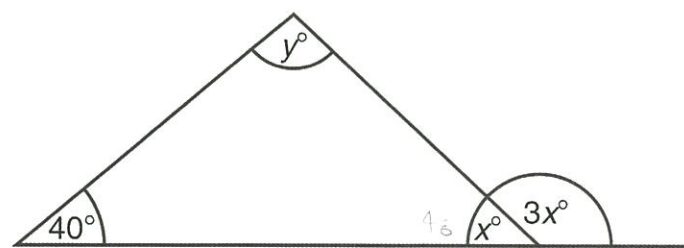
2 $(4^3)^2 =$

- 4^5 4^6 4^9 4^{32}
A **B** **C** **D**

- 3** The total cost of a tablet device comprises the cost of material, labour and overheads in the ratio 3 : 4 : 1.
The cost of material is \$315.
What is the total cost of the tablet?

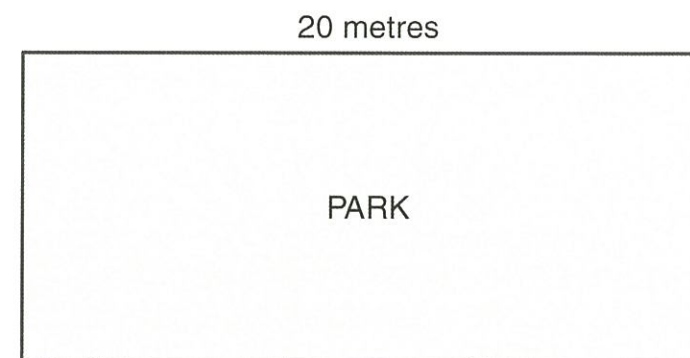
- \$525 \$735 \$840 \$945
A **B** **C** **D**

- 4** In this triangle, what is the value y ?



- 45 95 135 140
A **B** **C** **D**

- 45** The length of this rectangular park is 20 metres.
The area of the park is A square metres.



Which calculation gives the perimeter (P) of the park in metres?

- $P = \frac{A}{20} - 20$ $P = 2A + 40$ $P = \frac{A}{10} + 40$ $P = \frac{A}{10} + 20$
A **B** **C** **D**



Mathematics



STUDENT NAME _____

NAME OF SCHOOL _____

TEST INSTRUCTIONS

FILL IN YOUR DETAILS

Turn to your ANSWER SHEET and fill in your name, school, grade, section, today's date, your date of birth and gender.

ANSWERING QUESTIONS

Go to the MATHEMATICS ANSWER SHEET.



This test has **45 QUESTIONS**. Each question has four possible options.

Choose the **BEST** answer from the four options, **A, B, C** or **D**.

FILL in **ONE** circle on your answer sheet with a pencil.

If you make a mistake, erase the pencil mark and fill in a different circle.

You must colour the entire circle as shown below:

<p>Correct response</p> 	<p>Incorrect responses</p> 
	<p>Line Very light pencil Pen Colored pencil</p>

Marks are NOT deducted for incorrect answers.

ALL ANSWERS SHOULD BE MARKED ON YOUR ANSWER SHEET ONLY.

EQUIPMENT ALLOWED IN THIS TEST

You may use a 2B or B pencil for this test. You may NOT use a calculator for this test.

TIME ALLOWED FOR TEST

The time allowed to complete this test is **60 minutes**.