W/C: 14/05/18

Name……

Teacher……

Assessment Week H

Year 10 Higher Tier Maths GCSE

Non-Calculator Paper

Time allowed: 1 Hour

Maximum mark: 54

1 Work out $\sqrt{2^6 + 6^2}$

Circle your answer.

[1 mark]

10 14 50 100

2 What is 800 million in standard form?

Circle your answer.

[1 mark]

800×10^6 8×10^8 8×10^9 0.8×10^{10}

3 Circle the expression that is equivalent to $\left(4a^5\right)^2$

[1 mark]

$16a^{10}$ $16a^7$ $8a^{10}$ $8a^7$

4 $y = \frac{10}{x}$

If the value of x doubles, what happens to the value of y?

Circle your answer.

[1 mark]

$\div 2$ $\times 2$ $\div 5$ $\times 5$

5 (a) Factorise $x^2 - 100$

[1 mark]

Answer _____

5 (b) Solve $7x + 6 > 1 + 2x$

[2 marks]

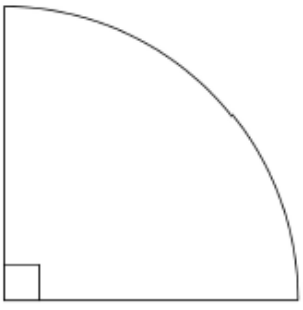
Answer _____

6 Work out the value of $\left(\sqrt{3}\right)^2 \times \left(\sqrt{2}\right)^2$

[2 marks]

Answer _____

7 Here is a quarter circle of radius 6 cm



Not drawn accurately

Work out the area of the quarter circle.

Give your answer in terms of π.

[2 marks]

Answer _____ cm^2

8 Three **whole** numbers are each rounded to the nearest 10

The sum of the rounded numbers is 70

Work out the **maximum** possible sum for the original three numbers.

[2 marks]

Answer _____

9 Circle the expression for the range of n consecutive integers.

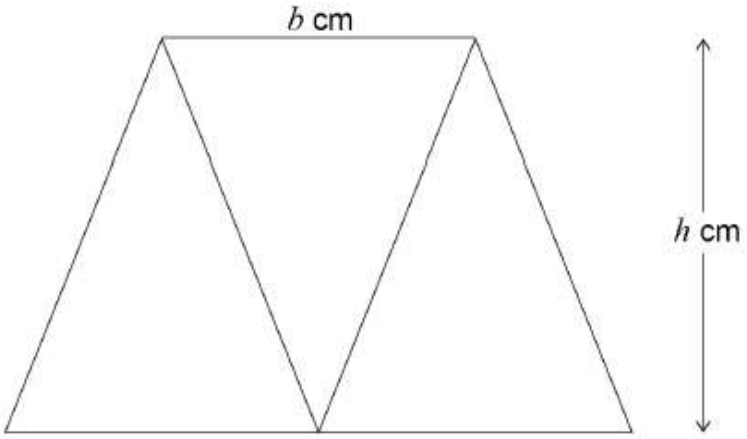
[1 mark]

$\frac{n+1}{2}$ $n-1$ n $n+1$

10 Three identical isosceles triangles are joined to make this trapezium.

Each triangle has base b cm and perpendicular height h cm

Not drawn accurately



10 (a) Work out an expression, in terms of b and h, for the area of the trapezium.

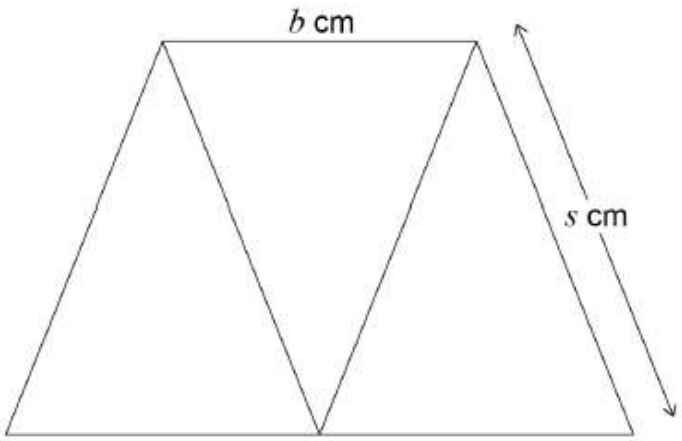
Give your answer in its simplest form.

[2 marks]

Answer _____ cm^2

10 (b) This diagram shows the same trapezium.

Not drawn accurately



$b : s = 2 : 3$

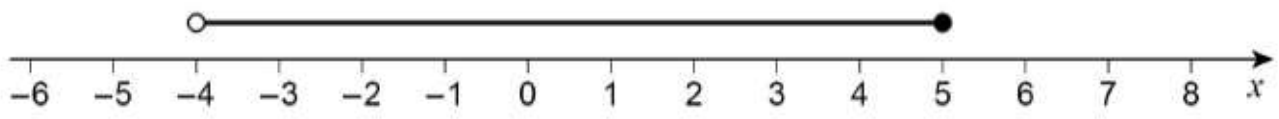
Work out an expression, in terms of b, for the perimeter of the trapezium.

[2 marks]

Answer _____ cm

11

Circle the inequality shown by the diagram.



[1 mark]

$-4 \leqslant x < 5$ $-4 \leqslant x \leqslant 5$ $-4 < x < 5$ $-4 < x \leqslant 5$

12 Use approximations to 1 significant figure to estimate the value of

$$\frac{0.526 \times 39.6^2}{\sqrt{97.65}}$$

You **must** show your working.

[3 marks]

Answer _____

13 $x : y = 7 : 4$

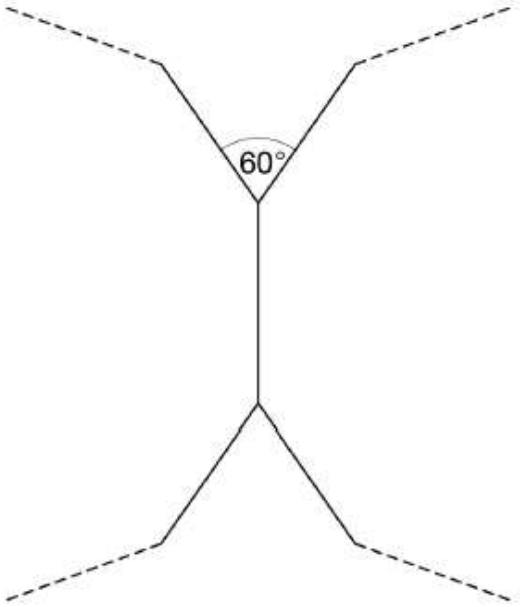
$x + y = 88$

Work out the value of $x - y$

[3 marks]

Answer _____

14 Two congruent regular polygons are joined together.



Not drawn accurately

Work out the number of sides on each polygon.

[3 marks]

Answer _____

15

y is 100% **more** than x.

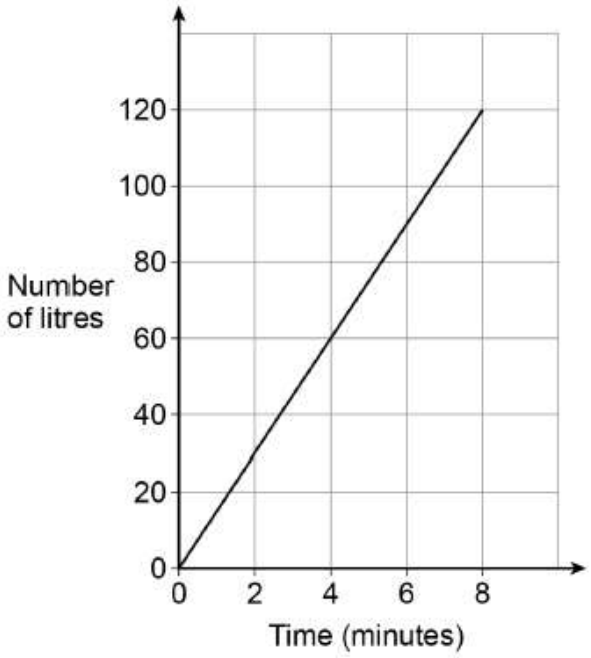
Circle the ratio $x : y$

[1 mark]

1 : 100 100 : 1 1 : 2 2 : 1

16 Water is poured into a tank.

The graph shows the number of litres of water in the tank.



How much water is poured into the tank each minute?

Circle your answer.

[1 mark]

1.5 litres 15 litres 30 litres 120 litres

17 A and B are **similar** solids.

Solid	length (cm)
A	l
B	$2l$

Alex says,

"The volume of B is double the volume of A because the length of B is double the length of A."

Is he correct?

Tick a box.

Yes ☐ No ☐

Give a reason for your answer.

[1 mark]

_____

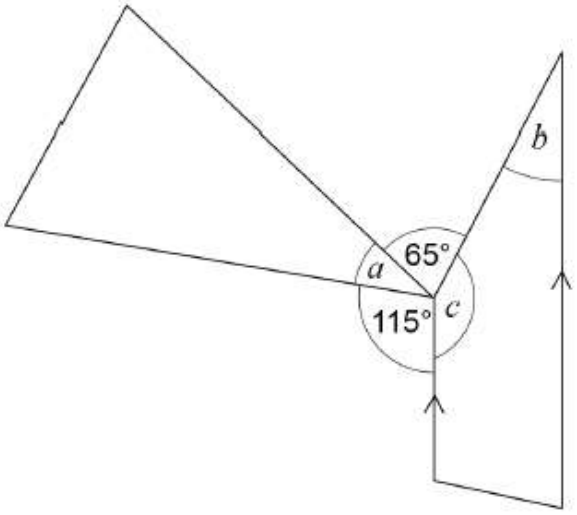
_____

18 Circle the **two** roots of $(2x + 3)(5x - 2) = 0$

[1 mark]

$-\frac{3}{2}$ $-\frac{2}{5}$ $\frac{2}{5}$ $\frac{3}{2}$

19 The diagram shows a triangle and a trapezium.



Not drawn accurately

Prove that $a = b$

[3 marks]

20

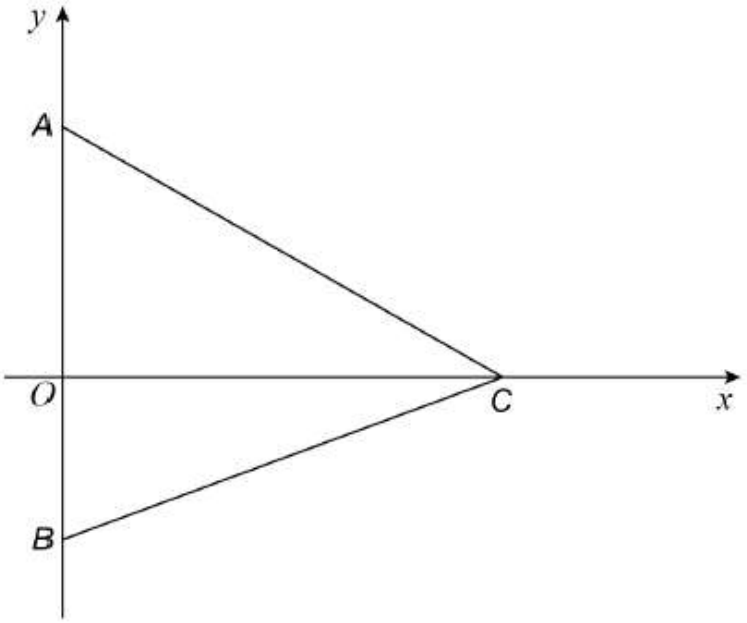
The first four terms of a sequence are -10 -8 -6 -4

Circle the expression for the nth term of the sequence.

[1 mark]

$-12 - 2n$ $-8 - 2n$ $n + 2$ $2n - 12$

21 A, B and C are points on the axes as shown.



Not drawn accurately

The area of triangle ABC is 28 square units.

Work out possible coordinates for A, B and C.

[2 marks]

A (_____ , _____) B (_____ , _____) C (_____ , _____)

22

Circle the equation of the line that is parallel to the x-axis.

[1 mark]

$y = -5$ $x - y = 0$ $x = 3$ $x + y = 0$

23 The equation of a curve is $y = (x + 3)^2 + 5$

Circle the coordinates of the turning point.

[1 mark]

(5, 3) (5, –3) (3, 5) (–3, 5)

24

Multiply out and simplify $(x - 8)^2$

[2 marks]

Answer _____

25 15 machines work at the same rate.

Together, the 15 machines can complete an order in 8 hours.

3 of the machines break down after working for 6 hours.

The other machines carry on working until the order is complete.

In total, how many hours does **each** of the other machines work?

[3 marks]

Answer _____ hours

26 (a) $0.\dot{7} = \frac{7}{9}$

Use this fact to show that $0.0\dot{7} = \frac{7}{90}$

[1 mark]

26 (b) Using part (a) or otherwise, convert $0.2\dot{7}$ to a fraction.

Give your answer in its simplest form.

[3 marks]

Answer _____

27 (a)

Work out the value of $81^{-\frac{1}{4}}$

[2 marks]

Answer _____

27 (b)

Write 16×8^{2x} as a power of 2 in terms of x.

[3 marks]

Answer _____

END OF QUESTIONS