

# Wyke Summer Work Part one

## Maths Skills

Name:

**Check List**

Completed all Questions

Marked all questions you had the mark scheme to

**Q1.** (a) Write 0.000 97 in standard form.

Answer \_\_\_\_\_

(1)

(b) Work out  $\frac{3 \times 10^5}{4 \times 10^3}$

Give your answer as an ordinary number.

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Answer \_\_\_\_\_

(2)

(Total 3 marks)

**Q2.**

Put these numbers in order from smallest to largest.

$8 \times 10^{-4}$

$4 \times 10^{-2}$

$6 \times 10^{-4}$

$0.07$

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Smallest \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Largest \_\_\_\_\_

(Total 2 mark)

**Q3.**

The length of each side of a regular pentagon is 8.4 cm to 1 decimal place.

(a) Complete the error interval for the length of one side.

\_\_\_\_\_ cm  $\leq$  length  $<$  \_\_\_\_\_ cm

(2)

(b) Complete the error interval for the perimeter.

\_\_\_\_\_ cm  $\leq$  perimeter  $<$  \_\_\_\_\_ cm

(1)

(Total 3 marks)

**Q4.**

The height of a tree is 12 metres, correct to the nearest metre.

Circle the error interval.

$11.5 \text{ m} \leq \text{height} < 12.5 \text{ m}$

$11.5 \text{ m} \leq \text{height} \leq 12.5 \text{ m}$

$11.5 \text{ m} < \text{height} \leq 12.5 \text{ m}$

$11.5 \text{ m} < \text{height} < 12.5 \text{ m}$

(Total 1 mark)

**Q5.**

Work out the value of

$$\left(1\frac{2}{3}\right)^2$$

Circle your answer.

$1\frac{4}{9}$

$3\frac{1}{3}$

$2\frac{4}{9}$

$2\frac{7}{9}$

(Total 1 mark)

**Q6.**

Work out the value of  $(3^{12} \div 3^5) \div (3^2 \times 3)$

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Answer \_\_\_\_\_

(Total 3 marks)

**Q7.**

(a) Simplify fully  $3a^2 + 7a + 3 - a^2 + 8a - 4$

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Answer \_\_\_\_\_

(3)

(b) Factorise fully  $24y^2 - 20y$

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Answer \_\_\_\_\_

(2)

(Total 5 marks)

**Q8.**

Circle the expression that can be written as  $2y$

$y + y$

$y^2$

$2 + y$

$y \times y$

(Total 1 mark)

**Q9.**

Rearrange  $x = 2y - 6$  to make  $y$  the subject.

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Answer \_\_\_\_\_

(Total 2 marks)

**Q10.**

Multiply out and simplify  $(x + 5)(x - 1)$

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Answer \_\_\_\_\_

(Total 2 marks)

**Q11.**

Rearrange  $y = 3x - 2$  to make  $x$  the subject.

Circle your answer.

$$x = \frac{y}{3} - 2$$

$$x = \frac{y+2}{3}$$

$$x = \frac{y-2}{3}$$

$$x = \frac{y}{3} + 2$$

(Total 1 mark)

**Q12.**

Here is a formula.

$$T = n^2 - \frac{12}{n}$$

(a) Work out  $T$  when  $n = 5$

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Answer \_\_\_\_\_

(1)

(b) Why is  $T$  **always** positive when  $n$  is negative?

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(2)

(Total 3 marks)

**Q13.**

Solve  $x^2 = 196$

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Answer \_\_\_\_\_

(Total 2 marks)

**Q14.**

Simplify fully  $\frac{4x - 8x^2}{12x - 6}$

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Answer \_\_\_\_\_

(Total 3 marks)

**Q15.**

Solve the simultaneous equations.

$$2x + y = 18$$

$$x - y = 6$$

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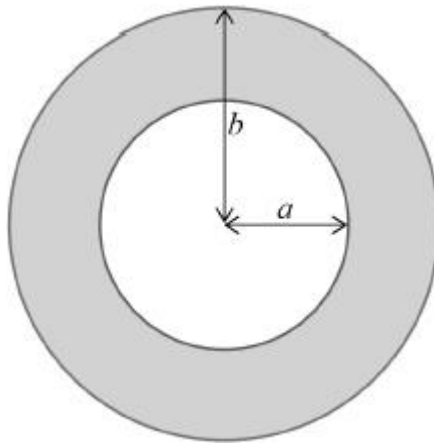
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Answer \_\_\_\_\_

(Total 3 marks)

**Q16.**

Here is an inflated swimming ring with dimensions in centimetres.



The volume of the ring,  $V \text{ cm}^3$ , is given by

$$V = 0.25\pi^2(b - a)^2(b + a)$$

Work out the volume when  $a = 20$  and  $b = 30$

Give your answer to 3 significant figures.

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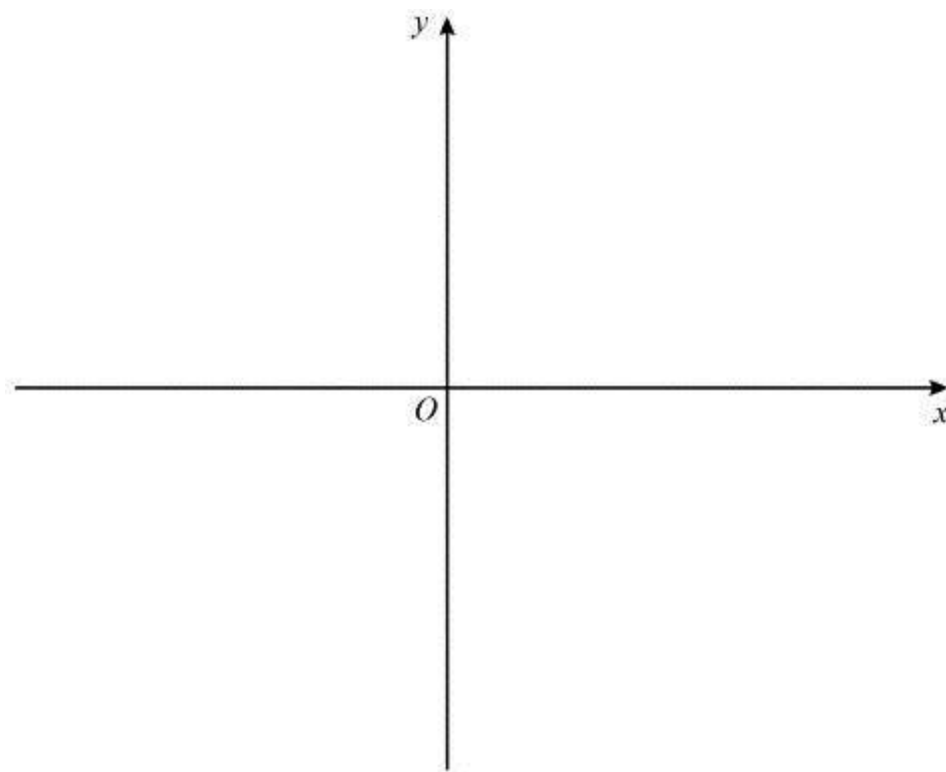
Answer \_\_\_\_\_  $\text{cm}^3$   
**(Total 3 marks)**

**Q17.**

On the axes, sketch the curve  $y = x^3 - 2$



You **must** show the coordinates of the  $y$ -intercept.

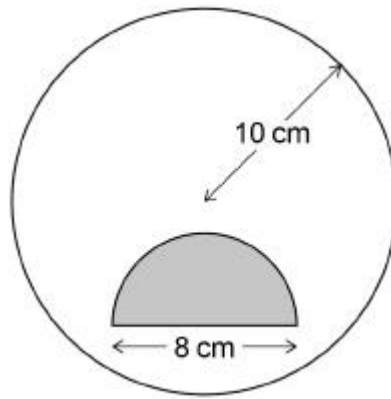


(Total 2 marks)

**Q18.**

A shaded semicircle is inside a circle as shown.

Not drawn accurately



The **radius** of the circle is 10 cm

The **diameter** of the semicircle is 8 cm

How many times bigger is the unshaded area than the shaded area?

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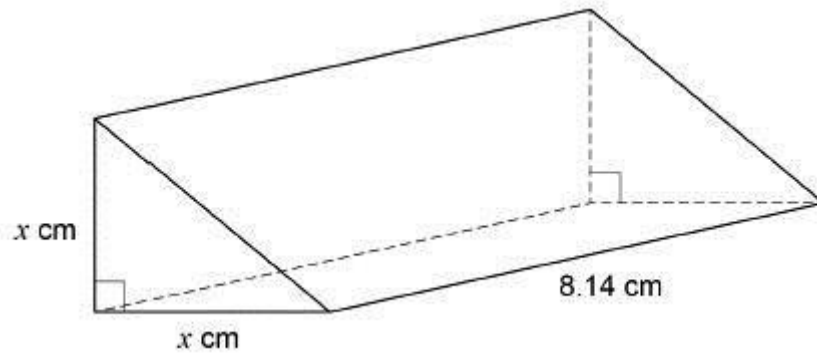
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Answer \_\_\_\_\_

(Total 4 marks)

**Q19.**

The triangular cross section of a prism is an isosceles right-angled triangle.



The volume of the prism is  $102 \text{ cm}^3$

Use approximations to estimate the value of  $x$ .

You **must** show your working.

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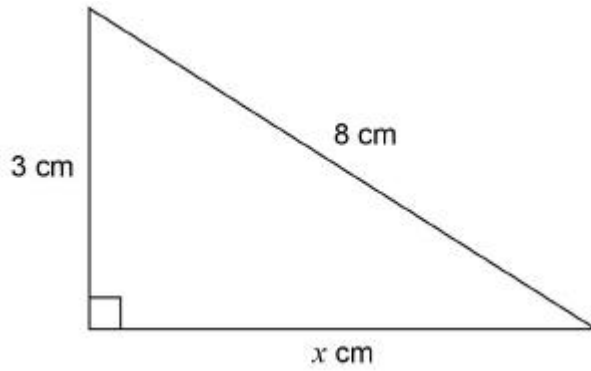
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Answer \_\_\_\_\_

(Total 3 marks)

**Q20.**



Not drawn accurately

Work out the value of  $x$  as a decimal.

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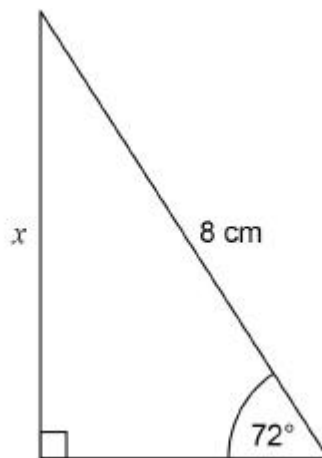
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Answer \_\_\_\_\_

(Total 3 marks)

**Q21.**

Use trigonometry to work out the length  $x$ .



Not drawn accurately

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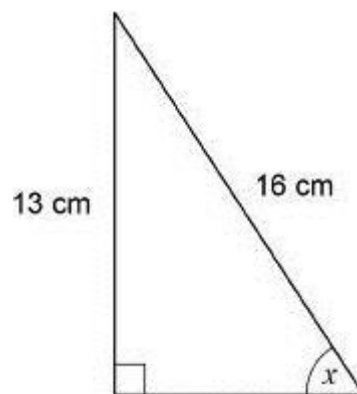
Answer \_\_\_\_\_ cm

(Total 2 marks)

**Q22.**

Here is a right-angled triangle.

Not drawn accurately



Use trigonometry to work out the size of angle  $x$ .

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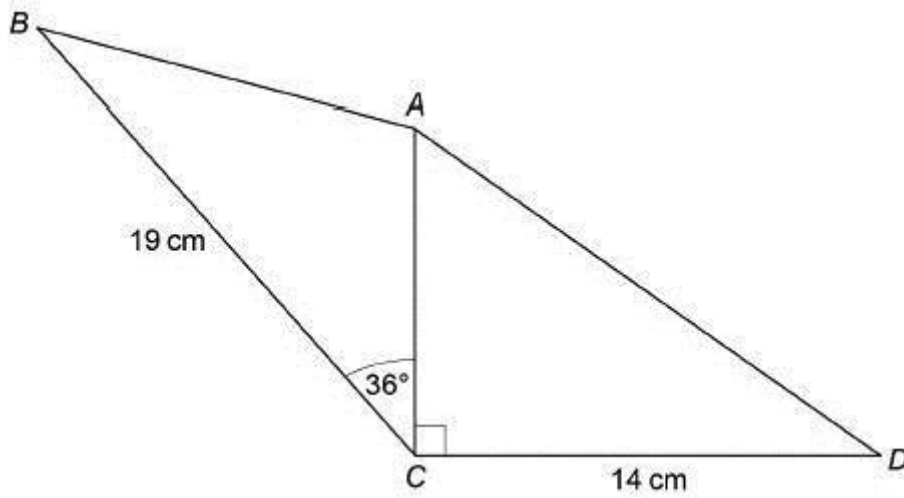
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Answer \_\_\_\_\_ degrees  
(Total 2 marks)

**Q23.**

$ABC$  and  $ACD$  are triangles.

Not drawn accurately



The area of  $ACD$  is  $80.5$   $\text{cm}^2$

Work out the area of  $ABC$ .

Give your answer to 3 significant figures.

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Answer \_\_\_\_\_  $\text{cm}^2$

**(Total 4 marks)**