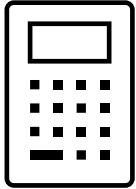


Surname:

Forename(s):

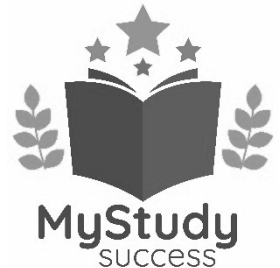
GCSE Mathematics – Foundation Tier

Paper 2 – Calculator



Practice Set C

ANSWERS



Materials

- **Formulae Sheet** (on the next page)
- **Black** ink or ball-point pen
- Pencil
- Eraser
- Protractor
- Compass
- Tracing Paper
- **Calculator allowed**

/40

Instructions

- Time allowed: **45 minutes**.
- The total mark for this paper is **40**.
- Show **all** of your working.
- Draw diagrams in pencil.
- Plot graphs in pencil.
- Diagrams are **not** accurately drawn, unless otherwise indicated.
- Cross through any work you don't want to be marked

Foundation Tier Formulae Sheet

Perimeter, Area and Volume

Where a and b are the lengths of the parallel sides and h is their perpendicular separation:

Area of a trapezium = $\frac{1}{2}(a + b)h$

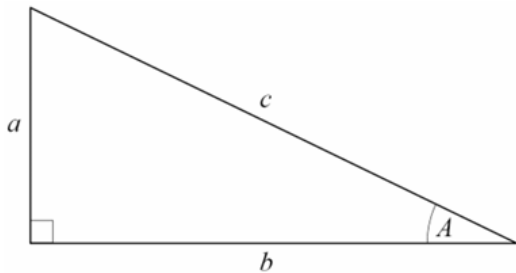
Volume of a prism = area of cross section $\times$ length

Where r is the radius and d is the diameter:

Circumference of a circle = $2\pi r = \pi d$

Area of a circle = πr^2

Pythagoras' Theorem and Trigonometry



In any right-angled triangle where a , b and c are the length of the sides and c is the hypotenuse:

$$a^2 + b^2 = c^2$$

In any right-angled triangle ABC where a , b and c are the length of the sides and c is the hypotenuse:

$$\sin A = \frac{a}{c} \quad \cos A = \frac{b}{c} \quad \tan A = \frac{a}{b}$$

Compound Interest

Where P is the principal amount, r is the interest rate over a given period and n is number of times that the interest is compounded:

$$\text{Total accrued} = P \left(1 + \frac{r}{100} \right)^n$$

Probability

Where $P(A)$ is the probability of outcome A

and $P(B)$ is the probability of outcome B :

$$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$$

$$P(A \text{ and } B) = P(A \text{ given } B) P(B)$$

- 1 Write down the number of days in 6 weeks.

1 week = 7 days

$$6 \times 7 = 42$$

42 days

(Total for question 1 is 1 mark)

- 2 (a) Simplify $p + p + p + p$

4p

(1)

- (b) Simplify $12m \div 4$

3m

(1)

(Total for question 2 is 2 marks)

- 3 Write down the number of sides of a decagon

10

Total for question 3 is 1 mark)

- 4 In a school supply cupboard, there is a box full of books, a box full of pens, and a box full of rulers.

(a) In the first box, there are 250 books. The books either have lined paper or square paper.

$\frac{7}{10}$ of the books have lined paper.

How many books have lined paper?

$$\begin{array}{l} \textcircled{\times} \frac{7}{10} \text{ of } 250 \\ \textcircled{\div} \end{array}$$

$$250 \div 10 = 25$$

$$25 \times 7 = 175$$

175 books
(2)

(b) In the second box, there are 800 pens. The pens are have either black ink, green ink, or red ink.

The number of black pens to green pens to red pens is in the ratio 5 : 2 : 1

What fraction of the pens have green ink?

$$5 + 2 + 1 = 8$$

B : G : R

5 : 2 : 1

$$\frac{2}{8} \text{ OR } \frac{1}{4}$$

$$\frac{1}{4}$$

(1)

(b) In the third box, there are 105 long rulers, and 45 short rulers.

What percentage of the rulers are long rulers?

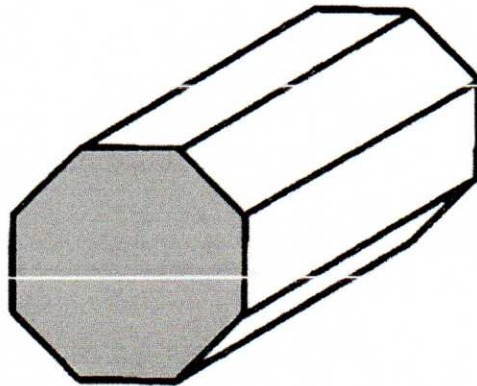
$$\text{Total} = 105 + 45 = 150$$

$$\frac{105}{150} \times 100 = 70\%$$

70 %
(2)

(Total for question 4 is 5 marks)

- 5 Here is a diagram of a prism.



The area of the cross section of the prism is 24cm^2

The length of the prism is 7.5cm

Work out the volume of the prism.

$$\begin{aligned}\text{Volume} &= \text{cross sectional area} \times \text{length} \\ &= 24 \times 7.5 \\ &= 180\end{aligned}$$

180 cm^3
(Total for question 5 is 1 mark)

- 6 (a) Work out the value of $\frac{2 + \sqrt[3]{55-2.6}}{3.2}$

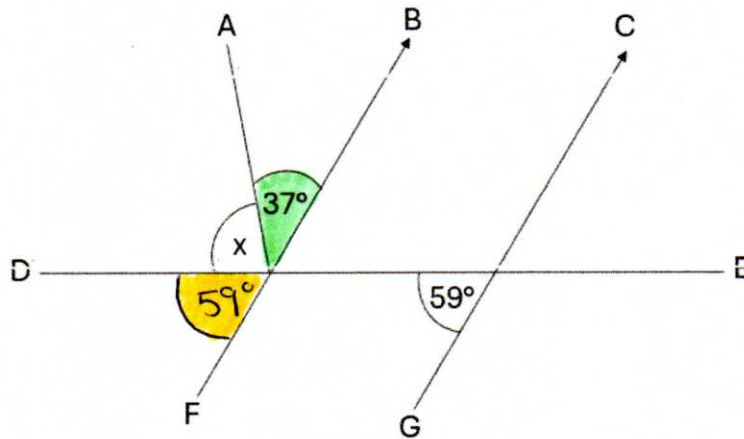
Write down all of the numbers shown on your calculator display.

1.794392895 (2)

- (b) Round your answer in part (a) to two decimal places.

1.79 (1)
(Total for question 6 is 3 marks)

- 7 BF is parallel to CG
DE is a straight line



Work out the size of angle x.

59° (corresponding angles are equal)

$$x = 180 - 59 - 37 = 84$$

(angles on a straight line sum to 180°)

$$x = 180^\circ$$

(Total for question 7 is 3 marks)

- 8 Write down the ratio of **650g** to **3kg**
Give your answer in its simplest form:

$$\text{kg} \xrightarrow{\times 1000} \text{g}$$

$$3\text{kg} = 3000\text{g}$$

$$650 : 3000$$

$$\div 50$$

$$\div 50$$

$$13 : 60$$

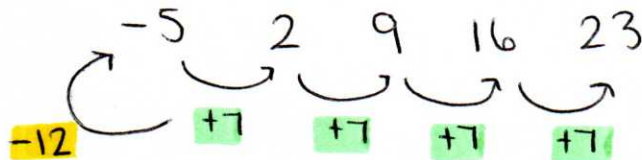
$$13 : 60$$

(Total for question 8 is 2 marks)

9 Here are the first 5 terms of a sequence.

-5 2 9 16 23

(a) Find an expression, in terms of n , for the n th term of this sequence.



$$7n - 12$$

$$\underline{7n - 12}$$

(2)

(b) Work out the 101st term in this sequence.

$$7n - 12$$

$$7(101) - 12 = 695$$

$$\underline{695}$$

(1)

(Total for question 9 is 3 marks)

10 Make h the subject of the formula

$$y = \sqrt{\frac{h-3}{7}}$$

$$\hookrightarrow y^2 = \frac{h-3}{7}$$

$$\textcircled{\times 7}$$

$$\textcircled{\times 7}$$

$$\hookrightarrow 7y^2 = h - 3$$

$$\textcircled{+3}$$

$$\textcircled{+3}$$

$$\hookrightarrow 7y^2 + 3 = h$$

$$\underline{h = 7y^2 + 3}$$

(Total for question 10 is 3 marks)

11 Lia buys a new campervan

The cost of the campervan is £16,500 plus VAT at 20%.

Lia pays a deposit of £4500.

She pays the rest of the cost in 12 equal payments.

Work out the cost of one of these 12 payments.

$$20\% \text{ of } £16,500 = \frac{20}{100} \times 16,500 = £3,300$$

$$16,500 + 3,300 = 19,800 \text{ (total cost)}$$

$$19,800 - 4,500 = 15,300$$

$$\frac{15,300}{12} = 1275$$

£ 1275

(Total for question 11 is 4 marks)

12 The table gives information about the temperature, $T^{\circ}\text{C}$, at midday for 50 cities in the UK on one day during the winter time.

midpoint	Temperature ($T^{\circ}\text{C}$)	Frequency	CF
-7.5	$-10 \leq T < -5$	6	6
-2.5	$-5 \leq T < 0$	18	24
2.5	$0 \leq T < 5$	13	37 ← 25
7.5	$5 \leq T < 10$	9	46
12.5	$10 \leq T < 15$	4	50

(a) Write down the class interval that contains the median

median = 25th city

$$0 \leq T < 5$$

(1)

(b) Calculate an estimate for the mean temperature

$$(-7.5 \times 6) + (-2.5 \times 18) + (2.5 \times 13) + (7.5 \times 9) + (12.5 \times 4)$$

$$\begin{aligned} \hookrightarrow &= -45 - 45 + 32.5 + 67.5 + 50 \\ &= 60 \end{aligned}$$

$$\frac{60}{50} = 1.2$$

$$1.2^{\circ}\text{C}$$

(3)

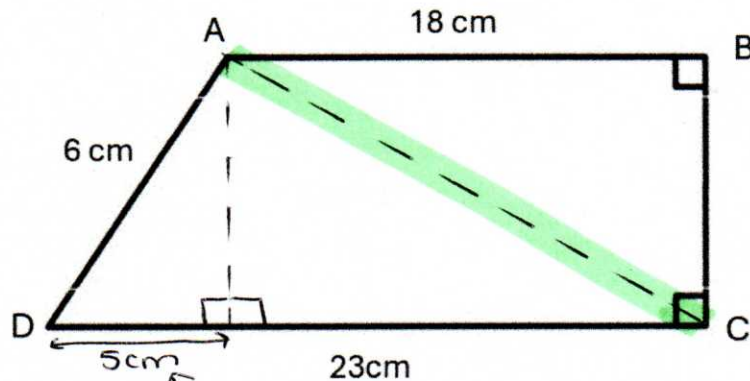
(c) Explain why your answer to part (b) is only an estimate.

The midpoints for each group has been used.

(1)

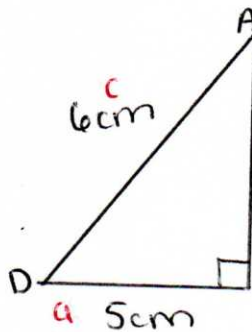
(Total for question 12 is 5 marks)

13 ABCD is a trapezium.



Calculate the length of AC. $23 - 18$

Give your answer correct to 3 significant figures



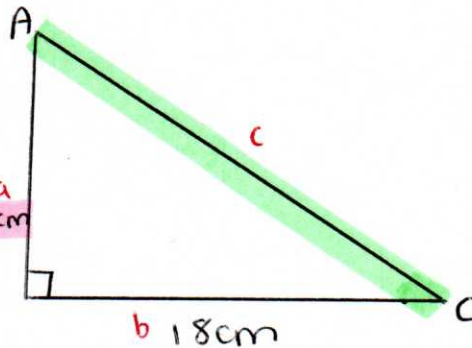
3.3166 cm

b

3.3166 cm

a

b 18 cm



$$a^2 + b^2 = c^2$$

$$5^2 + b^2 = 6^2$$

$$25 + b^2 = 36$$

$$\textcircled{-25} \quad \textcircled{-25}$$

$$b^2 = 11$$

$$\textcircled{\surd} \quad \textcircled{\surd}$$

$$b = 3.3166 \dots$$

$$a^2 + b^2 = c^2$$

$$3.3166^2 + 18^2 = c^2$$

$$335 = c^2$$

$$\textcircled{\surd} \quad \textcircled{\surd}$$

$$c = 18.303 \dots$$

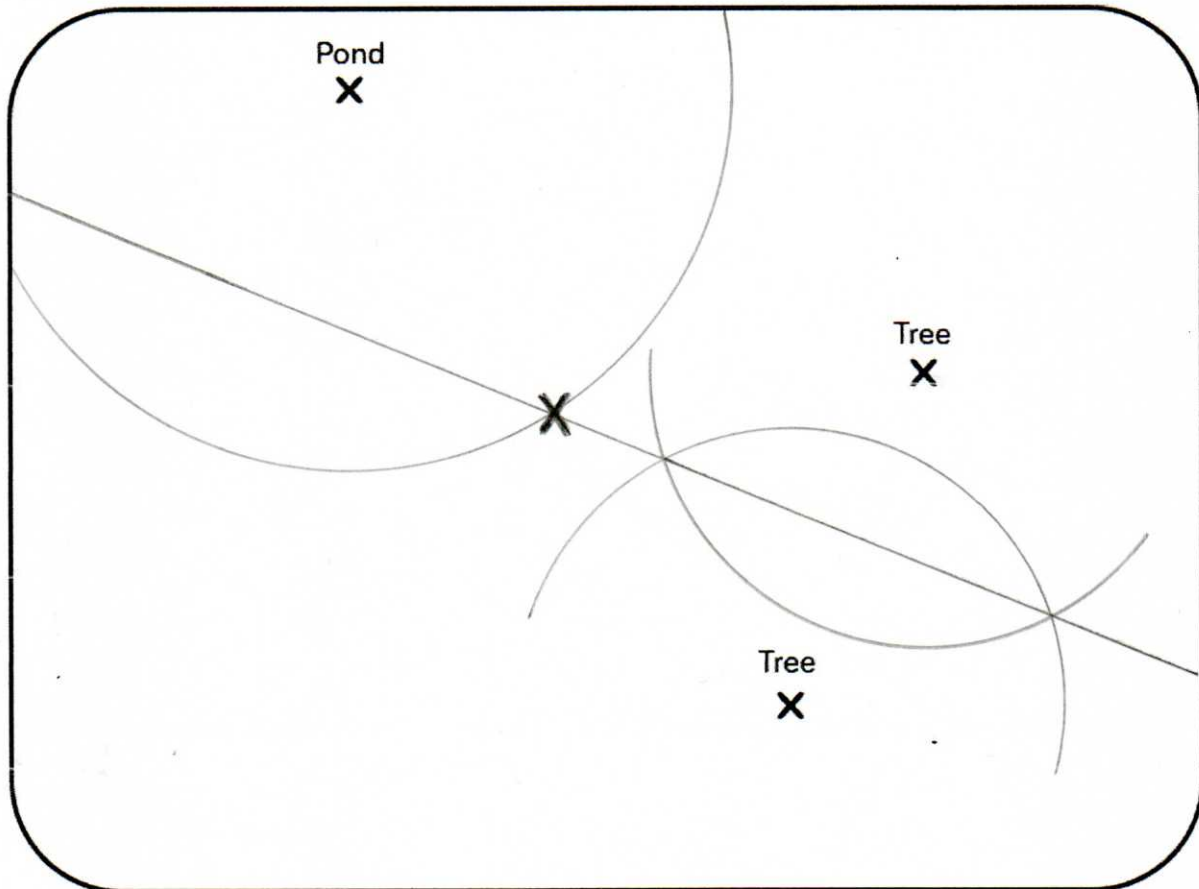
18.3

cm

(Total for question 13 is 4 marks)

14 Here is a scale drawing of Andy's garden.

1 centimetre represents 4 metres



Andy is planning to build a barbecue station in his garden.

He wants the barbecue to be equidistant from both trees.

He also wants the barbecue to be exactly 20 meters away from the pond.

Show, by marking with an X, the position that the barbecue can be built.

$$\begin{array}{l} 1\text{cm} : 4\text{m} \\ \times 5 \downarrow \quad \quad \quad \uparrow \times 5 \\ 5\text{cm} : 20\text{m} \end{array}$$

(Total for question 14 is 3 marks)

END OF TEST

TOTAL FOR THIS PAPER IS 40 MARKS