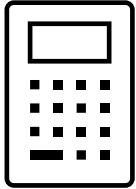


Surname:

Forename(s):

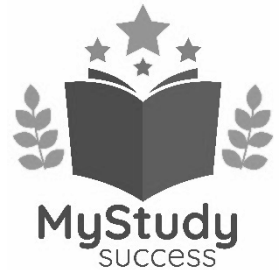
GCSE Mathematics – Foundation Tier

Paper 3 – Calculator



Practice Set A

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

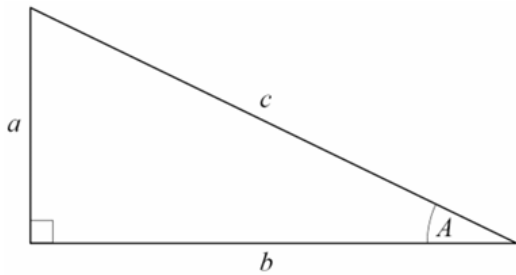
Volume of a prism = area of cross section $\times$ length

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 (a) Solve $4w = 24$

$$\begin{array}{ccc} \textcircled{\div 4} & 4w = 24 & \textcircled{\div 4} \\ & w = 6 & \end{array}$$

$$w = \underline{6} \quad (1)$$

(b) Solve $x - 9 = 36$

$$\begin{array}{ccc} & x - 9 = 36 & \\ & \textcircled{+9} & \textcircled{+9} \\ & x = 45 & \end{array}$$

$$x = \underline{45} \quad (1)$$

(c) $\frac{y}{6} = 18$

$$\begin{array}{ccc} & \frac{y}{6} = 18 & \\ & \textcircled{\times 6} & \textcircled{\times 6} \\ & y = 108 & \end{array}$$

$$y = \underline{108} \quad (1)$$

(Total for question 1 is 3 marks)

2 Work out the value of 2^7

$$\underline{128}$$

(Total for question 2 is 1 mark)

3

1	2		3	
		4	5	6
	7	8	9	10
	11			
12	13	14	15	

What fraction of this shape is shaded?

Give your answer in its simplest form.

$$\frac{15}{25} \begin{matrix} \div 5 \\ \div 5 \end{matrix} = \frac{3}{5}$$

$$\frac{3}{5}$$

(Total for question 3 is 2 marks)

- 4 (a) Fill in the boxes using one even number and two different odd numbers.

$$\boxed{12} + \boxed{15} + \boxed{11} = 38$$

(lots of possible answers)

(2)

- (b) Fill in the boxes using one square number and one prime number.

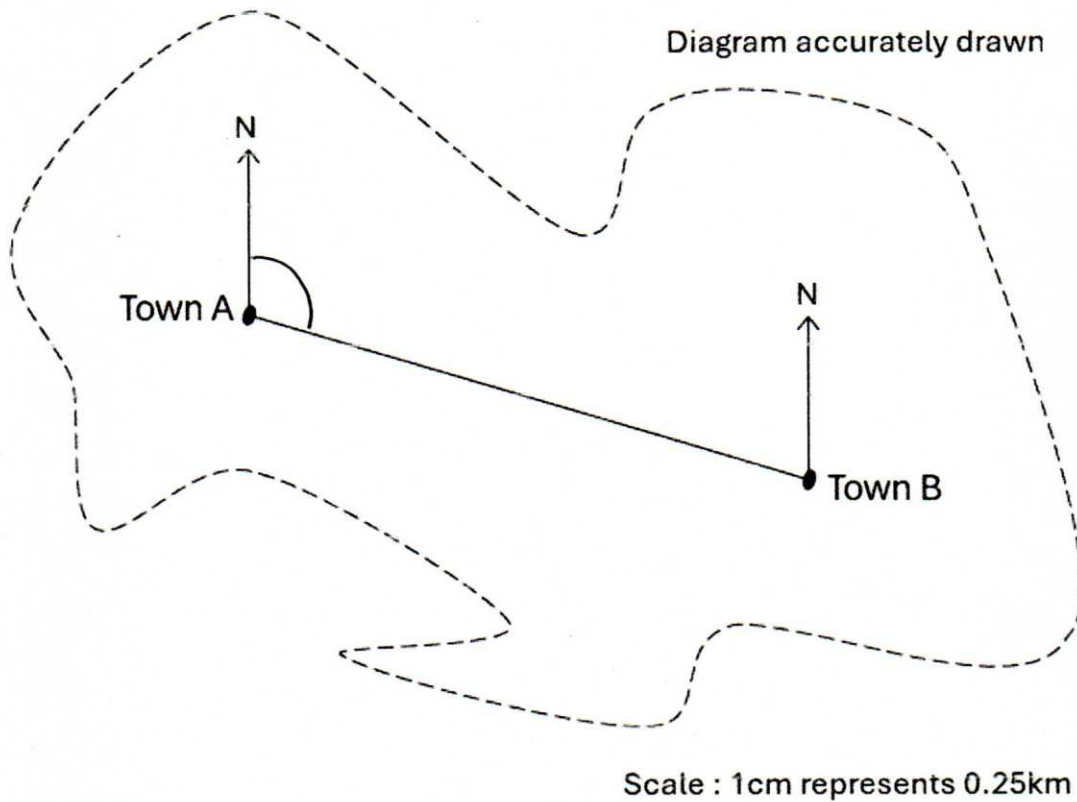
$$\boxed{9} \times \boxed{5} = 45$$

OR 5×9

(2)

(Total for question 4 is 4 marks)

5 Here is a map of a small island.



(a) Work out the real distance between the two towns.

$$\begin{array}{l} \times 7.7 \left(\begin{array}{l} 1\text{cm} = 0.25\text{ km} \\ 7.7\text{cm} = 1.925\text{ km} \end{array} \right) \times 7.7 \end{array}$$

1.925 km

Answers from 1.9 → 1.975 (2)

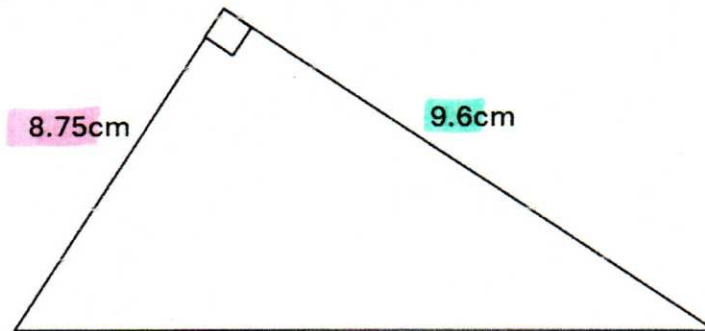
(b) Find the bearing of Town B from Town A.

106°

Answers from 105 → 107 (1)

(Total for question 5 is 3 marks)

6 (a) Work out the area of this triangle.



$$\text{Area} = \frac{1}{2} \times b \times h$$

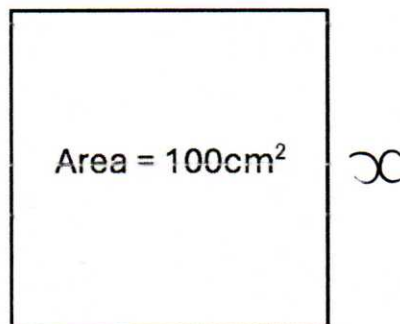
$$= \frac{1}{2} \times 8.75 \times 9.6$$

$$= 42$$

42

cm²
(2)

(b) Given that the area of this square is 100cm²
Work out the perimeter of the square.



$$\text{Area} = b \times h$$

$$100 = x \times x$$

$$100 = x^2$$

$$10 = x$$

$$\text{Perimeter} = 4 \times 10 = 40$$

40

cm
(2)

(Total for question 6 is 4 marks)

- 7 There are 530 calories in 100g of milk chocolate.
 There are 33 calories in 100g of strawberries.
 Petra has 40g of chocolate and 120g of strawberries as a snack.
 Work out the total number of calories in this snack.

chocolate

$$\begin{array}{l}
 \div 100 \left(\begin{array}{l} 100\text{g} = 530 \text{ cals} \\ 1\text{g} = 5.3 \text{ cals} \end{array} \right) \div 100 \\
 \times 40 \left(\begin{array}{l} 40\text{g} = 212 \text{ cals} \end{array} \right) \times 40
 \end{array}$$

strawberries

$$\begin{array}{l}
 \div 100 \left(\begin{array}{l} 100\text{g} = 33 \text{ cals} \\ 1\text{g} = 0.33 \text{ cals} \end{array} \right) \div 100 \\
 \times 120 \left(\begin{array}{l} 120\text{g} = 39.3 \text{ cals} \end{array} \right) \times 120
 \end{array}$$

$$\text{Total} = 212 + 39.3 = 251.3 \text{ calories}$$

251.3 calories

(Total for question 7 is 4 marks)

8 There are 220 students in year 11 at a school.

28 students study a language and play a sport.

In total, 35% of the students in year 11 study a language.

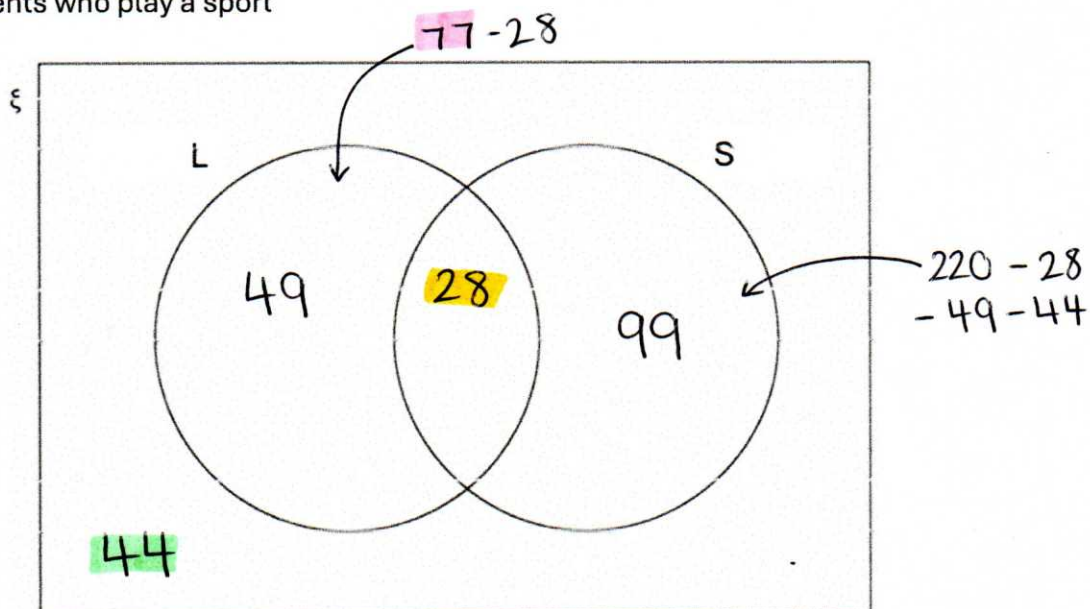
$\frac{1}{5}$ of the students in year 11 do **not** study a language and do **not** play a sport.

In the venn diagram,

ξ = Students in year 11

L = Students who study a language

S = Students who play a sport



(a) Complete the Venn diagram.

$$35\% \text{ of } 220 = 0.35 \times 220 = 77$$

$$\frac{1}{5} \text{ of } 220 = 220 \div 5 = 44$$

(4)

(b) One of the students is chosen at random.

What is the probability that the student plays a sport.

$$28 + 99 = 127$$

$$\frac{127}{220}$$

(2)

(Total for question 8 is 6 marks)

- 9 Zanha works 25 hours per week in the UK.
She is paid £463.50 per week

Zanha applies for the same job in Australia.
The rate of pay is 33.41 Australian dollars per hour.

£1 = 1.796 Australian dollars

$$\begin{array}{r} \text{↗} \\ \times 1.796 \end{array}$$

Which country has a greater rate of pay for this job?
You must show how you get your answer.

Rate of pay UK

$$= \frac{463.50}{25} = \boxed{\pounds 18.54}$$

Rate of pay Australia

$$= \boxed{\$ 33.41}$$

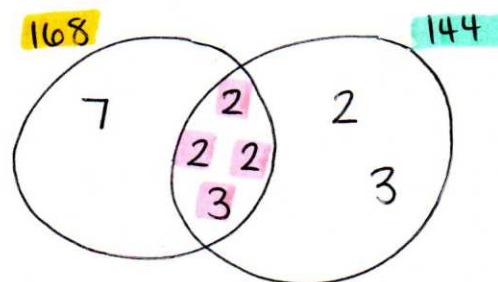
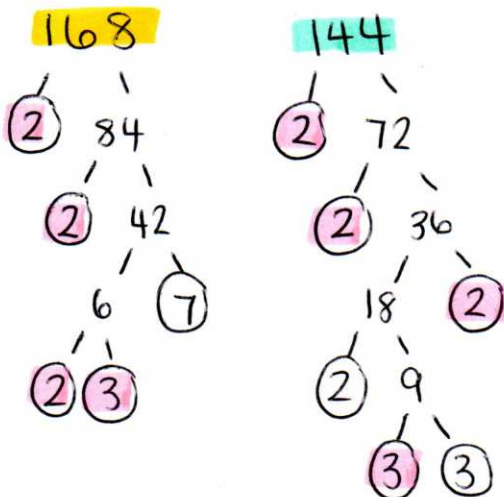
$$\pounds 18.54 \times 1.796 = \boxed{\$ 33.30}$$

$$\$ 33.30 < \$ 33.41$$

Australia has a greater rate of pay.

(Total for question 9 is 3 marks)

- 10 Work out the lowest common multiple (LCM) of 168 and 144.

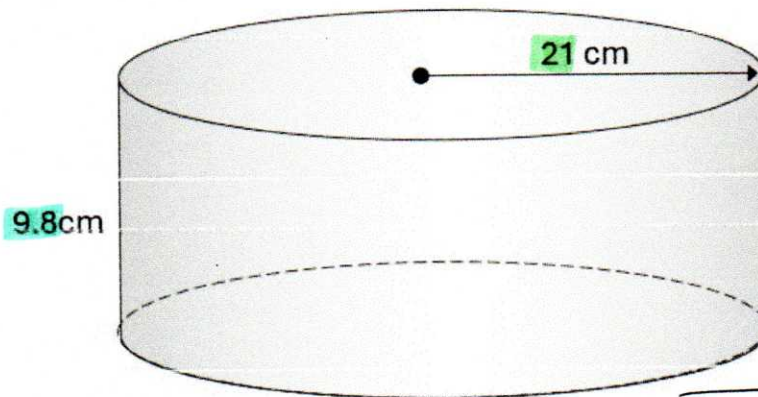


$$\text{LCM} = 7 \times 2 \times 2 \times 2 \times 3 \times 2 \times 3 = 1008$$

1008

(Total for question 10 is 2 marks)

II The diagram shows an empty cylindrical tank.



The tank has a radius of 21cm and a height of 9.8cm.

Fluid flows into the tank at a rate of 0.63 litres per minute.

Calculate the number of minutes taken to completely fill the tank.

Give your answer correct to the nearest minute.

$$\text{cm}^3 = \text{mL}$$

$$1000\text{mL} = 1\text{L}$$

$$\text{Volume} = \text{Cross sectional area} \times \text{height}$$

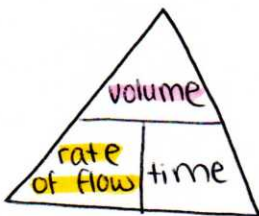
$$(\pi r^2)$$

$$\text{volume} = \pi r^2 h$$

$$= \pi (21)^2 (9.8) = 13577.33513... \text{ cm}^3$$

$$= 13577.33513... \text{ mL}$$

$$= 13.577... \text{ L}$$



$$\text{time} = \frac{\text{Vol}}{\text{rof}} = \frac{13.577}{0.63} = 21.55079...$$

$$= 22 \text{ minutes}$$

22 minutes
(Total for question II is 4 marks)

12 Zack's car has a value of £13,000 correct to the nearest £1,000.

(a) Write down the error interval for the value, £V, of the car.

$$\underline{12,500} \leq V < \underline{13,500}$$

(2)

(b) The actual value of Zack's car was £13,200.

A few years later, Zack sells his car for £11,220.

Calculate the percentage loss that Zack makes.

$$\begin{aligned} \% \text{ change} &= \frac{\text{difference}}{\text{original}} \times 100 \\ &= \frac{13,200 - 11,220}{13,200} \times 100 \\ &= 15\% \end{aligned}$$

15 %
(2)

(Total for question 12 is 4 marks)

END OF TEST

TOTAL FOR THIS PAPER IS 40 MARKS