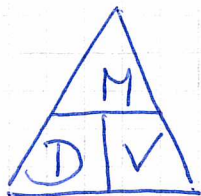


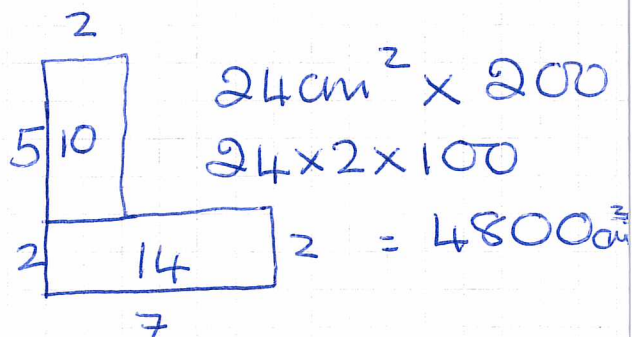
Set 2. Higher.

Paper 1.

1. ✓



Volume



$$\begin{aligned} M &= D \times V \\ &= 8 \times 4800 \\ &= \underline{\underline{38400 \text{ g}}} \end{aligned}$$

$$\begin{array}{r} 4800 \\ \times 8 \\ \hline 38400 \\ 6 \end{array}$$

2. ✓ $D = 240 \text{ ms.}$

$0930 \rightarrow 10:30 \rightarrow 11:00.$



$1\frac{1}{2} \text{ hrs}$

$1\text{st } 90 \text{ ms.}$

$$S = \frac{90}{1.5} = \frac{900}{15} \div 5$$

$$\begin{array}{r} \cancel{240} \\ - 90 \\ \hline 150 \end{array}$$

150 ms left.

6 mph

$$\begin{array}{r} 60 \\ 3 \overline{) 180} \\ \hline \end{array} = \frac{180}{3}$$

$$T = \frac{D}{S} = \frac{150 \div 3}{60 \div 3} = \frac{5}{2} \quad 2.5 \text{ hrs } 2\text{h } 30\text{m}$$

11:00 — 12:00 — 13:00 — 13:30

Constant speed if faster arrive sooner
if slower arrive later.

No Stops — if stopped arrive later

3/✓ £4000

Dep by 10% every year

1st $10\% \times 4000$

$\frac{1}{10} \times 4000 = 400$ off.

$$\begin{array}{r} 3 \overline{) 4000} \\ - 400 \\ \hline 3600 \end{array}$$

2nd $10\% \times 3600 = 360$ off.

$$\begin{array}{r} - 360 \\ \hline 3240 \end{array}$$

Value £ 3240

4/✓ Remover 600ml

$\frac{1}{4}$ of Remover \rightarrow 4500 ml of water

$$\begin{array}{l} 150 \rightarrow 4500 \\ \rightarrow 750 \end{array} \Bigg) \div$$

$$4500 \rightarrow 750 \quad \frac{750}{4500} \div 5 = \frac{15}{90} \div 5 \quad \frac{3}{18} = \frac{1}{6}$$

So 750ml is $\frac{1}{6}$ of 4500

\therefore Needs $\frac{1}{6} \times 150 = \underline{\underline{25g.}}$

5/✓

18 pks	12 boxes
--------	----------

Total number sweets in boxes/pk
 $= 30 \times 14 = 420$

Total number sweets in pkts $18 \times 10 = 180$

Number in boxes $420 - 180 = 240$

Mean number $= 240 / 12 = 20 //$

6. 0.038×10^2 3.8
 3800×10^{-4} 0.38 ✓
 380 380
 0.38×10^{-1} 0.038 ✓

0.38×10^{-1} , 3800×10^{-4} , 0.038×10^2 , 380

7. $\frac{2^6 \times 2^3}{2^n} = 2^5 = \frac{2^9}{2^n}$ $n = 4$
 ✓

8. $-6 \leq 2y < 5$
 $\div 2$
 ✓ $-3 \leq y < 2.5$

$-3, -2, -1, 0, 1, 2.$

9. x y 7 3

✓ HCF = 3 $\times 3$ 6, 9, 12

LCM = 36.

Factors of 36

1×36

2×18

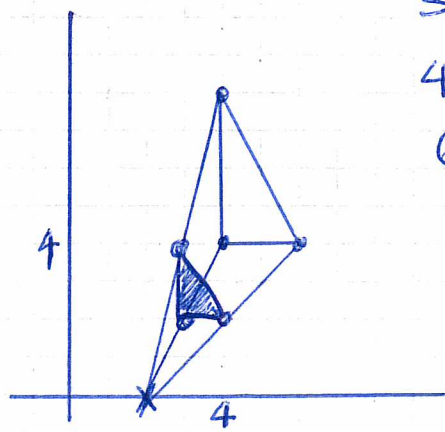
3×12

4×9

6×6

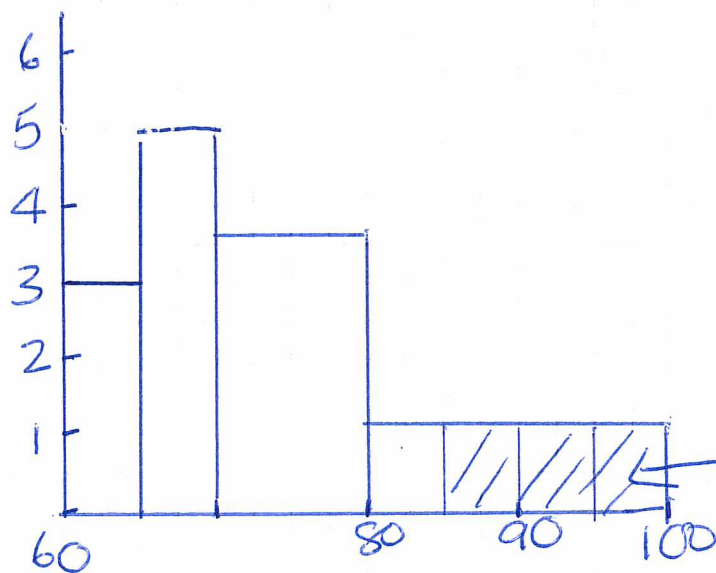
12 & 9.

10. Vertices $(3, 2)$
 $(3, 4)$
 $(4, 2)$
 ✓



11. Varying width histogram!

		f	$f.d.$
60 - 65	5	15	3
65 - 70	5	25	5
70 - 80	10	36	3.6
80 - 100	20	24	1.2



$$f = 24.$$

$$\frac{3}{4} \times 24 = \underline{\underline{18}}$$

12. $\frac{x^2 + 3x - 4}{2x^2 - 5x + 3} = \frac{(x+4)(x-1)}{(2x-3)(x-1)}$

a) $\frac{x^2 + 3x - 4}{2x^2 - 5x + 3} = \frac{(x+4)(x-1)}{(2x-3)(x-1)}$

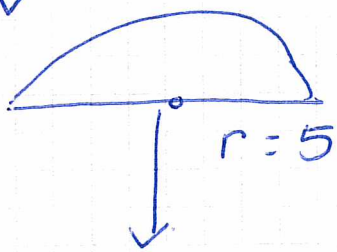
$$= \frac{x+4}{2x-3}$$

b) $\frac{4}{x+2} + \frac{3}{x-2} = \frac{4(x-2) + 3(x+2)}{(x+2)(x-2)}$

$$= \frac{4x - 8 + 3x + 6}{(x+2)(x-2)}$$

$$= \frac{7x - 2}{(x+2)(x-2)}$$

13. ✓ $4\pi r^2$



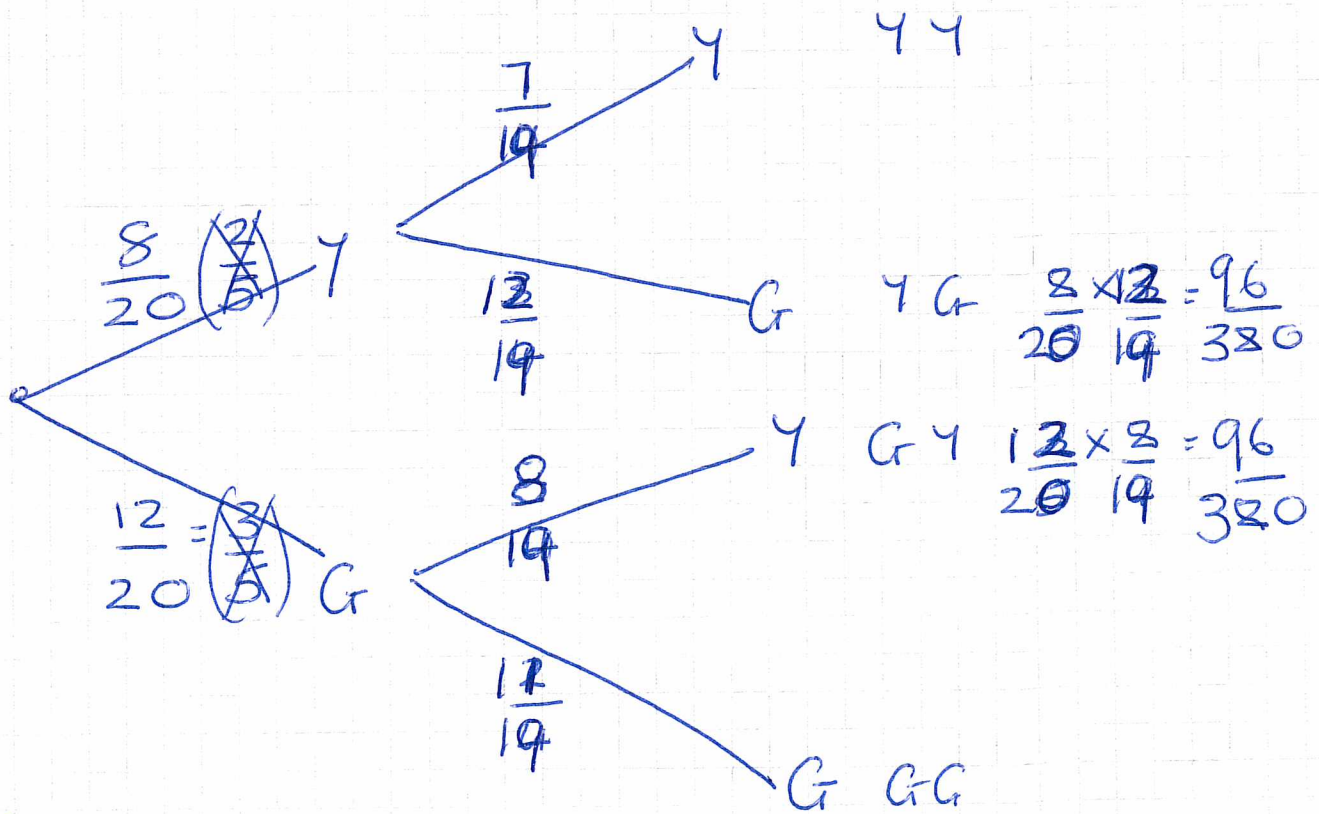
+

$\pi r^2 = \pi \times 5^2 = 25\pi$

$\frac{4\pi \times 5^2}{2} = 50\pi$

Total SA = 75π .

14. ✓



$P(2 \text{ diff colours}) = \frac{96}{380} + \frac{96}{380} = \frac{192}{380} = \frac{48}{95}$

DON'T CANCEL

$(n-1)(n-1) = n^2 - n - n + 1$

15 $n^2 - 1 + (n-1)^2 = n^2 - 1 + n^2 - 2n + 1$
 $= 2n^2 - 2n$
 $= 2n(n-1)$

Whatever n is $\times 2 = \text{even number}$

$$16. \checkmark AB = AC \quad (\triangle)$$

$$\checkmark \angle ADB = \angle ADC = 90^\circ \quad \text{RHS}$$

$$\angle ABD = \angle ACD = 60^\circ \quad \triangle$$

$$BD = DC \quad \checkmark AD \text{ is common.}$$

AD common

SAS

$$(\angle ABD = \angle ACD) \quad \underline{\angle BAD = \angle CAB}$$

$$AB = AC$$

$$\angle ABD = \angle ACD$$

AAS

$$AD = \text{common}$$

$$\underline{\angle BAD} = \underline{\angle CAB}$$

$$b) \quad BD = DC \quad \text{Congruent}$$

$$BC = AB \quad \triangle$$

$$\therefore BD = \frac{1}{2} AB$$

$$17 \quad a) \quad \frac{6}{\sqrt{5}} \times \sqrt{5} = \frac{6\sqrt{5}}{5} \quad \sqrt{20} = \sqrt{4 \times 5} = 2\sqrt{5}$$

$$b) \quad (2 + \sqrt{10})(\sqrt{5} + \sqrt{20}) = 2\sqrt{5} + 2\sqrt{20} + \sqrt{5}\sqrt{10} + \sqrt{10}\sqrt{20}$$

$$= 2\sqrt{5} + 4\sqrt{5} + 5\sqrt{2} + 10\sqrt{2}$$

$$6\sqrt{5} + 15\sqrt{2}$$

18. $x^2 + y^2 = 9$ circle $r = 3$
Centre $(0,0)$

Line $x + y = 1$ $(2.6, -1.6)$
 $x = 0$ $y = 1$ $(-1.6, 2.6)$
 $x = 1$ $y = 0$

Drawn.

19. P inverse V $V = 8$ $P = 5$

$P \propto \frac{1}{V}$

$P = \frac{K}{V}$

$5 = \frac{K}{8}$

$K = \underline{\underline{40}}$

$\therefore P = \frac{40}{V}$

b) $V = 2$ $P = \frac{40}{2}$
 $= \underline{\underline{20}}$

20. ϕ

$f(x) + 3 \uparrow 3$ $(3, -1)$

$f(2x) \left(x \times \frac{1}{2} \right)$ $(3/2, -4)$

$f(-x)$ Reflection $(-3, -4)$
 of axis

$$2 \quad A : (-3, 0) \quad B = (1, 6) \quad C = (5, 2)$$

1 AB

$$m_{AB} = \frac{6-0}{1-(-3)} = \frac{6}{4} = \frac{3}{2}$$

$$m_1 = -\frac{2}{3}$$

$$y = mx + c$$

$$2 = -\frac{2}{3} \times 5 + c$$

$$2 + \frac{10}{3} = c = \frac{16}{3}$$

$$y = -\frac{2}{3}x + \frac{16}{3}$$

$$\underline{\underline{3y + 2x = 16.}}$$