

52 Homework Set 6

LEVELS 3/4.

Set 6A

① $5f^2g^2 \times 2f^2g^2$
 $= 10f^4g^4$

②
$$\begin{array}{c} 36 \\ / \quad \backslash \\ 6 \quad 6 \\ / \quad \backslash \quad / \quad \backslash \\ 2 \quad 3 \quad 2 \quad 3 \end{array}$$
 $36 = 2^2 \times 3^2$

③ $0.045 = \frac{45}{1000}$
 $= \frac{9}{200}$

Set 6B

① $2x^2 - 6x$
 $= 2(-3)^2 - 6(-3)$
 $= 2 \times 9 + 18$
 $= 18 + 18$
 $= 36$

② $(-2.79) - (-7.02)$
 $= (-2.79) + 7.02$
 $= 7.02 - 2.79$
 $= 4.23$

$$\begin{array}{r} 6.9 \\ 7.02 \\ - 2.79 \\ \hline 4.23 \end{array}$$

③ tolerance + 0.3m minimum value $7.1 - 0.3$
 $= 6.8m$

Set 6C

① $\left(\frac{3}{4} - \frac{1}{6}\right) \text{ of } \frac{6}{7}$

$$= \left(\frac{9}{12} - \frac{2}{12} \right) \times \frac{6}{7}$$

$$= \frac{7}{12} \times \frac{6}{7}$$

$$= \frac{1}{2}$$

$$\textcircled{2} \quad (13x - 5y)3y$$

$$= 39xy - 15y^2$$

$$\textcircled{3} \quad \text{map length} = 85 \div 10$$

$$= 8.5 \text{ cm}$$

Set (6D)

$$\textcircled{i} \quad 4x(3x-2) - 3(3x-4)$$

$$= 12x^2 - 8x - 9x + 12$$

$$= 12x^2 - 17x + 12$$

$$\textcircled{2} \quad \text{one section} = 360 \div 12$$

$$= 30^\circ$$

$$\textcircled{3} \quad (-405) \div (-9000)$$

$$= 405 \div 9000$$

$$= 45 \div 1000$$

$$= 0.045$$

$$9 \overline{) 405}$$

Set (6E)

$$\textcircled{1} \quad 8a \div b = 2ab$$

$$= 4a$$

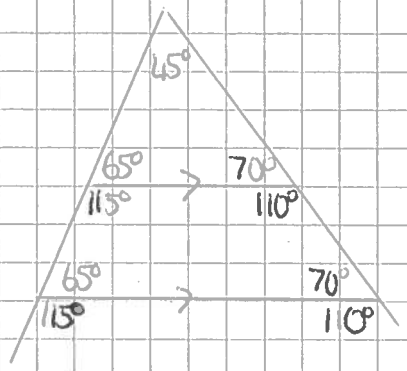
$$\textcircled{2} \quad 5 \text{ cm} : 50 \text{ m}$$

$$5 \text{ cm} : 5000 \text{ cm}$$

$$1 \text{ cm} : 1000 \text{ cm}$$

$$1 : 1000$$

3



$$65 + 70 = 135^\circ$$

$$180 - 135 = 45^\circ$$

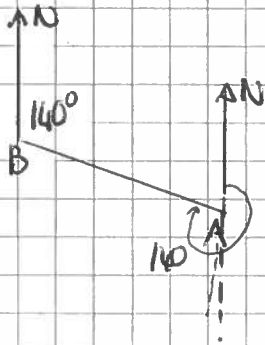
S2 Homework Set 7

Set 7A

①

$$\begin{aligned} & y^2 - (2y)^2 \\ &= y^2 - 4y^2 \\ &= -3y^2 \end{aligned}$$

②



$$\begin{aligned} \text{bearing of B from A} &= 180 + 140 \\ &= 320^\circ \end{aligned}$$

③

$$38\,6062 \times 0.007243$$

$$\begin{aligned} \text{estimate } & 40\,0000 \times 0.008 \\ &= 3200 \end{aligned}$$

Set 7B

①

$$\begin{aligned} & (a^2 + b^2)abc \\ &= a^3bc + ab^3c. \end{aligned}$$

②

$$\begin{aligned} \text{cost} &= \left| \frac{5}{8} \right| \times 12.80 \\ &= \frac{13}{8} \times 12.80 \\ &= 13 \times 1.60 \\ &= \pounds 20.80 \end{aligned}$$

$$\begin{array}{r} 1.60 \\ 8 \overline{) 12.80} \\ \underline{1.60} \\ 1.60 \\ \underline{1.60} \\ 0.00 \\ \underline{0.00} \\ 20.80 \end{array}$$

③

3 weeks = 21 days.

30 days in September.

14th September.

Set (70)

$$\textcircled{1} \quad 3(2x-3) - 2(1-x) - (x+1) = 0$$

$$6x - 9 - 2 + 2x - x - 1 = 0$$

$$x - 12 = 0$$

$$7x = 12$$

$$x = \frac{12}{7}$$

$$\textcircled{2} \quad 1.5 \times 365 \times 24 \times 60 \times 60 \text{ seconds}$$

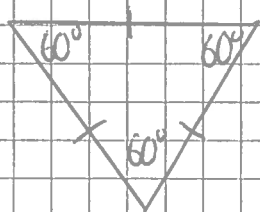
$$= 365 \times 36 \times 3600$$

$$= 365 \times 129600$$

$$= 47304000 \text{ seconds}$$

$$\begin{array}{r} 36 \\ \times 36 \\ \hline 216 \\ 1080 \\ \hline 1296 \end{array} \quad \begin{array}{r} 1296 \\ \times 365 \\ \hline 64380 \\ 154800 \\ 1296000 \\ \hline 3828800 \\ 4730400 \end{array}$$

③



Set (70)

$$\textcircled{1} \quad \left(\frac{4}{9} \div \left(\frac{1}{3} + \frac{1}{5} \right) \right) \times \frac{1}{4}$$

$$= \left(\frac{4}{9} \div \left(\frac{4}{3} + \frac{1}{5} \right) \right) \times \frac{5}{4}$$

$$= \left(\frac{4^1 \times 3^1}{9^1} \div \left(\frac{4^1}{3^1} + \frac{1}{5} \right) \right) \times \frac{5}{4}$$

$$= \left(\frac{1}{3} + \frac{1}{5} \right) \times \frac{5}{4}$$

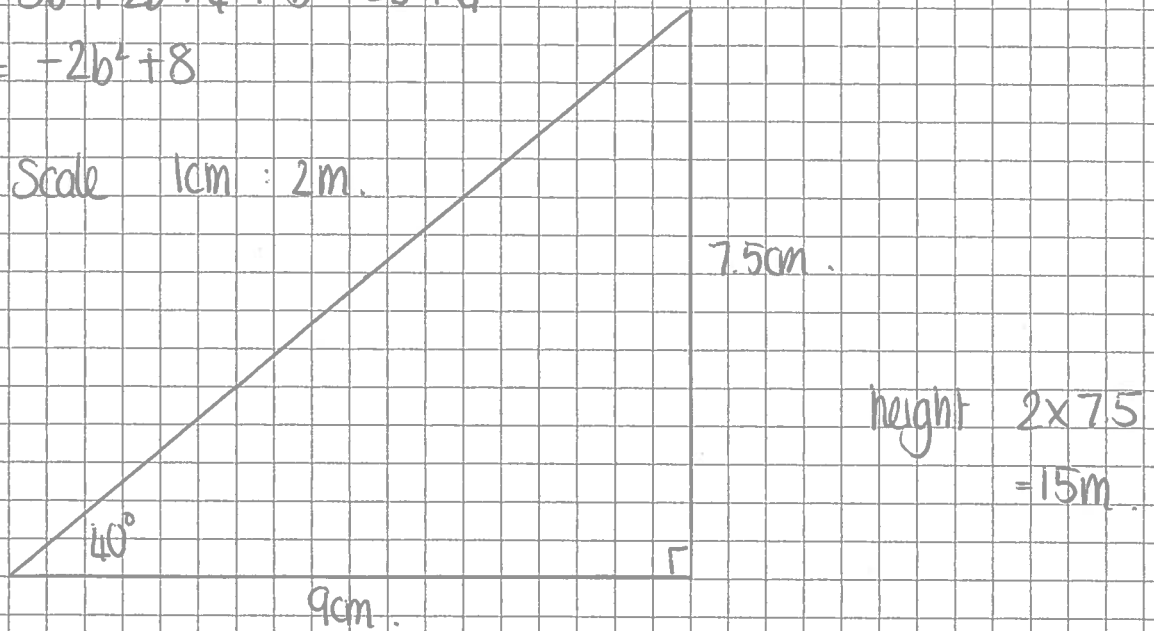
$$= \left(\frac{5}{15} + \frac{3}{15} \right) \times \frac{5}{4}$$

$$= \frac{8^2}{15^3} \times \frac{8^1}{4^1}$$

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

$$\begin{aligned} \textcircled{2} \quad & -3b^2 + 2b + 4 + b^2 - 2b + 4 \\ & = -2b^2 + 8 \end{aligned}$$

\textcircled{3} Scale 1cm : 2m.



Q1 (7E)

\textcircled{1}

let $x = \text{number}$

$$7x - 28 = 5x$$

$$2x - 28 = 0$$

$$2x = 28$$

$$x = 14.$$

\textcircled{2}

$$\begin{aligned} \text{exterior angle} &= 360 \div 9 \\ &= 40^\circ \end{aligned}$$

$$\begin{aligned} \text{interior angle} &= 180 - 40 \\ &= 140^\circ \end{aligned}$$

\textcircled{3}

$$-3x + 2 \geq 20$$

$$-3x \geq 18$$

$$x \leq -6.$$

Set 2 Homework Set (8)

Set 8A

$$\textcircled{1} \quad (-5d^2 - e^2)e \\ = -5d^3e - e^3$$

$$\textcircled{2} \quad 48 \text{ mins} = \frac{48}{60} \text{ hrs} \\ = \frac{8}{10} \\ = 0.8 \text{ hours}$$

$$\textcircled{3} \quad \left(\frac{19.4}{0.0437} \right)^2 \quad \text{estimate} \quad \left(\frac{20}{0.04} \right)^2 \\ = \left(\frac{2000}{4} \right)^2 \\ = 500^2 \\ = 250000$$

Set 8B

$$\textcircled{1} \quad \left(3 \frac{3}{4} - 3 \frac{1}{2} \right) \div \frac{7}{8} \\ = \left(\frac{3}{4} - \frac{2}{4} \right) \div \frac{7}{8} \\ = \frac{1}{4} \times \frac{8^2}{7} \\ = \frac{2}{7}$$

$$\textcircled{2} \quad 3a^2b \times (-3ab) \\ = -9a^3b^2$$

$$\textcircled{3} \quad \text{total of both vacuum cleaners} = 2 \times 99.95 \\ = \pounds 199.90 \\ \text{cost} = 199.90 - 89.55 \\ = \pounds 110.35$$

Set 8C

$$\begin{aligned} \textcircled{1} \quad & 4t(t^3 - 3t^2) \\ & = 4t^4 - 12t^3 \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad \text{map length} & = 2300 \div 500 \\ & = 23 \div 5 \\ & = 4.6 \text{ cm} \end{aligned}$$

$$5 \overline{) 23.30} \begin{array}{r} 4.6 \\ \underline{20} \\ 33 \\ \underline{30} \\ 30 \\ \underline{30} \\ 0 \end{array}$$

$$\begin{aligned} \textcircled{3} \quad & 0.00605 \\ & = 0.0061 \quad (4 \text{ dp}) \end{aligned}$$

Set 8D

$$\begin{aligned} \textcircled{1} \quad & \frac{2}{5} \text{ of } \left(2 \frac{3}{4} - \frac{7}{8} \right) \\ & = \frac{2}{5} \times \left(2 \frac{6}{8} - \frac{7}{8} \right) \\ & = \frac{2}{5} \times \left(1 \frac{14}{8} - \frac{7}{8} \right) \\ & = \frac{2}{5} \times \left(1 \frac{7}{8} \right) \\ & = \frac{2}{5} \times \frac{15}{8} \\ & = \frac{3}{4} \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad & 3z + 34 > 10z - 14 \\ & 34 > 7z - 14 \\ & 48 > 7z \\ & \frac{48}{7} > z \\ & z < \frac{48}{7} \end{aligned}$$

$$\begin{aligned} \textcircled{3} \quad & \text{number of cards} = 52 \\ & \text{number of cards that are not face cards} = 52 - 4 \times 3 \\ & = 40 \end{aligned}$$

$$P(\text{not a face card}) = \frac{40}{52} \\ = \frac{10}{13}$$

Set (8E)

①

$$A = lb$$

$$4(2x-1) = 36$$

$$8x - 4 = 36$$

$$8x = 40$$

$$x = 5$$

②

$$25 \text{ mm} : 5 \text{ km}$$

$$25 \text{ mm} : 5000 \text{ m}$$

$$25 \text{ mm} : 5000000 \text{ mm}$$

$$1 \text{ mm} : 200000 \text{ mm}$$

$$1 : 200000$$

$$\begin{aligned} \textcircled{3} \quad & 68 \div \left[(5^3 - 127 + 3)^4 \times (2 \times (100 - 91 + 2^3)) \right] \times (75 - (65 - 4^3)^9) \\ & = 68 \div \left[(125 - 127 + 3)^4 \times (2 \times (100 - 91 + 8)) \right] \times (75 - (65 - 64)^9) \\ & = 68 \div \left[1^4 \times (2 \times 17) \right] \times (75 - 1^9) \\ & = 68 \div [1 \times 34] \times 74 \\ & = 68 \div 34 \times 74 \\ & = 2 \times 74 \\ & = 148 \end{aligned}$$

S2 Homework Set 9

Set 9A

$$\begin{aligned} \textcircled{1} & \left(4 \frac{1}{5} \div \frac{7}{15} \right) \div \frac{3}{4} \\ & = \left(\frac{2 \times 3}{5} \times \frac{15}{7} \right) \div \frac{3}{4} \\ & = 9 \times \frac{4}{5} \\ & = 12 \end{aligned}$$

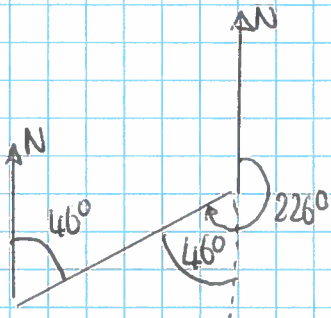
$$\begin{aligned} \textcircled{2} \quad 50p & : t3 \\ 50p & : 300p \\ 1p & : 6p \\ 1 & : 6 \end{aligned}$$

$$\begin{aligned} \textcircled{3} \quad 15 - 4y & < 12 \\ -4y & < -3 \\ y & > \frac{3}{4} \end{aligned}$$

Set 9B

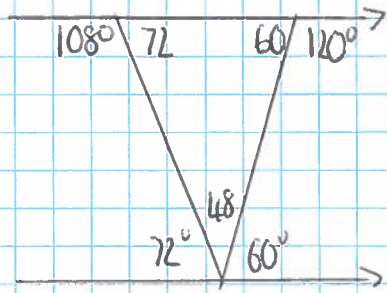
$$\begin{aligned} \textcircled{1} \quad F^2g(3g-2F) \\ & = 3F^2g^2 - 2F^3g \end{aligned}$$

②



new bearing 046°

3



$$72 + 60 = 132^\circ$$

$$180 - 132^\circ = 48^\circ$$

Set 9C

1

$$\begin{aligned} & 4A^3 + B(C - A) \\ &= 4 \times (-3)^3 + 5(-2 - (-3)) \\ &= 4 \times (-27) + 5(1) \\ &= -108 + 5 \\ &= -103 \end{aligned}$$

2

one pizza

$$5 \overline{) 27.50} \begin{array}{r} 5.50 \\ \underline{27.50} \\ 0 \end{array}$$

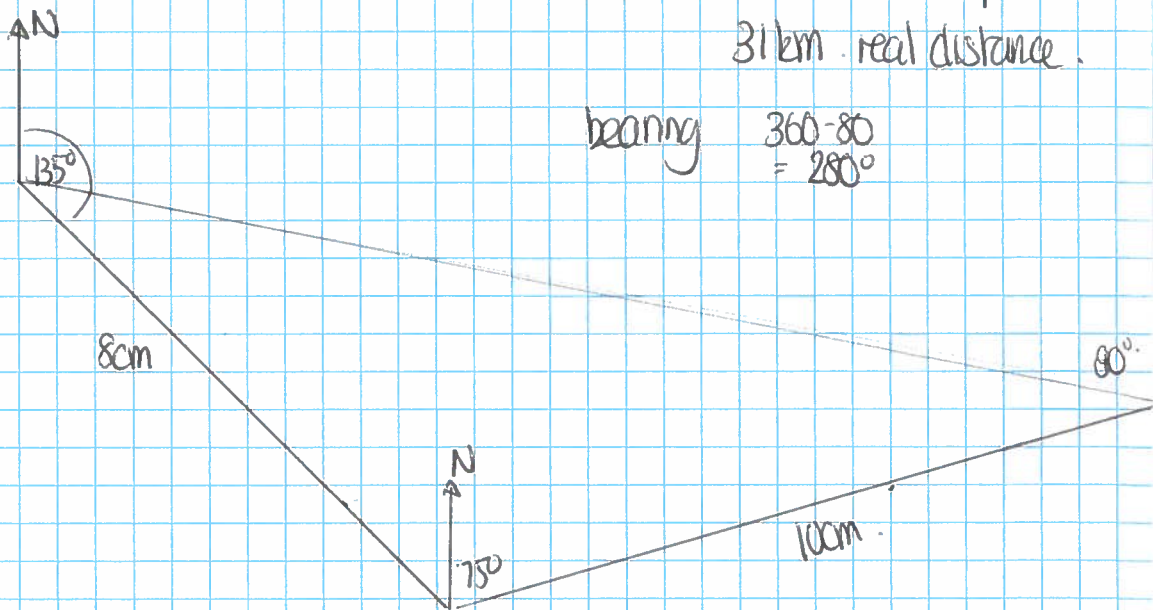
eight pizzas

$$\begin{array}{r} 5.50 \\ \times 8 \\ \hline 44.00 \end{array}$$

£44.

3

scale 1cm = 2km



distance 15.5cm on map
31km real distance.

$$\begin{aligned} \text{bearing} & 360 - 80 \\ &= 280^\circ \end{aligned}$$

$$\textcircled{9D} \quad \textcircled{1} \quad (2mn)^4 \\ = 16m^4n^4$$

$$\textcircled{2} \quad 9.8124 \\ = 9.812 \quad (3 \text{ d.p.})$$

$$\textcircled{3} \quad 12t^2 + 18t^3 + 6t^4 \\ = 6t^2(2 + 3t + t^2)$$

$$\textcircled{9E} \quad \textcircled{1} \quad 2\frac{1}{5} \times \frac{15}{33} + 4\frac{1}{5} \div \frac{7}{8} \\ = \frac{11^1}{5^1} \times \frac{15^1}{33^1} + \frac{21^3}{5^1} \times \frac{8}{7^1} \\ = 1 + \frac{24}{5} \\ = 1 + 4\frac{4}{5} \\ = 5\frac{4}{5}$$

$$\textcircled{2} \quad \frac{1}{4}t^2 - s + \frac{1}{2} + \frac{1}{2}t^2 - \frac{1}{2}s + \frac{1}{4} \\ = \frac{3}{4}t^2 - \frac{3}{2}s + \frac{3}{4}$$

$$\textcircled{3} \quad 2.4 \text{ hrs.} \qquad 0.4 \times 60 \\ = 2 \text{ hrs } 24 \text{ mins.} \qquad = 24$$

S2 Homework Set 10

Set (10A)

①

	<u>workmen</u>	<u>hours</u>
$\div 12 \left\{$	12	3
	1	36
$\times 9 \left($	9	4

$\left. \begin{array}{l} \times 12 \\ \div 9 \end{array} \right\}$

It would take 9 workmen
4 hours.

②

$$\begin{aligned} & \frac{2}{5} \text{ of } 3\frac{1}{2} + \frac{4}{5} \\ &= \frac{2}{5} \times \frac{7}{2} + \frac{4}{5} \\ &= \frac{7}{5} + \frac{4}{5} \\ &= \frac{11}{5} \\ &= 2\frac{1}{5} \end{aligned}$$

③

$$\begin{aligned} & (-0.5) \times (-120) \\ &= 5 \times 12 \\ &= 60 \end{aligned}$$

Set (10B)

①

$$\begin{aligned} & (-2a^2b)^2 \\ &= 4a^4b^2 \end{aligned}$$

②

$$\begin{aligned} \text{map length} &= 86 \div 1000 \\ &= 0.086 \text{ m} \\ &= 8.6 \text{ cm} \end{aligned}$$

③

$$\begin{aligned} m + (m+1) + (m+2) &= 225 \\ 3m + 3 &= 225 \\ 3m &= 222 \end{aligned}$$

$$m = 74$$

Set (10c)

$$\begin{aligned} \textcircled{1} & \left(\left(\frac{2}{3} \times \frac{1}{2} \right) \div \frac{3}{4} \right) \times 3 \\ & = \left(\frac{1}{3} \times \frac{4}{3} \right) \times 3 \\ & = \frac{4}{9} \times 3 \\ & = \frac{4}{3} \\ & = 1\frac{1}{3} \end{aligned}$$

$$\begin{aligned} \textcircled{2} & (m^2 + 5n) km \\ & = km^3 + 5knm \end{aligned}$$

$$\begin{aligned} \textcircled{3} & 4.2 \text{ cm to } 420 \text{ km} \\ & 42 \text{ mm to } 420\,000 \text{ m} \\ & 42 \text{ mm to } 420\,000\,000 \text{ mm} \\ & 1 \text{ mm to } 10\,000\,000 \text{ mm} \\ & 1 : 10\,000\,000 \end{aligned}$$

Set (10d)

$$\begin{aligned} \textcircled{1} & 2(21+y) + 2(3y+5) = 84 \\ & 42 + 2y + 6y + 10 = 84 \\ & 8y + 52 = 84 \\ & 8y = 32 \\ & y = 4. \end{aligned}$$

$$\text{length } 21 + 4 = 25 \text{ cm}$$

$$\text{breadth } 3 \times 4 + 5 = 17 \text{ cm}$$

$$\begin{aligned} \text{Area} &= lb \\ &= 25 \times 17 \\ &= 425 \text{ cm}^2. \end{aligned}$$

(2)

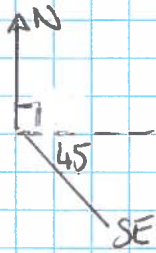
1 hour : 35 mins

60 mins : 35 mins

60 : 35

12 : 7

(3)



bearing 135°

Set (10E)

(1)

$$2 - 3(1-x) = 2(x+1)$$

$$2 - 3 + 3x = 2x + 2$$

$$-1 + 3x = 2x + 2$$

$$-1 + x = 2$$

$$x = 3$$

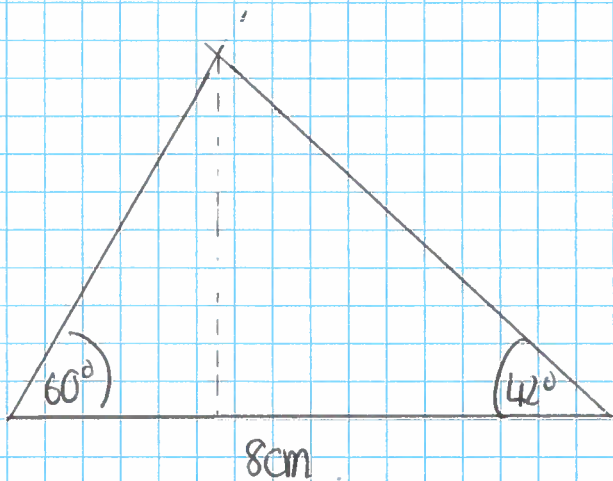
(2)

32650.04

= 32700 (3 s.f)

(3)

Scale 1cm : 1km



height 4.8cm
real height 4.8km