

Credit 2011 paper 1

$$\begin{aligned} 1. \quad & 2.4\bar{3} + 5.46 \div 60 \\ & = 2.4\bar{3} + 0.091 \\ & = \underline{\underline{2.491}} \end{aligned}$$

$$\begin{array}{r} 0.91 \\ 6 \overline{) 5.46} \\ \underline{6} \\ 0.91 \\ \underline{0} \\ 0.91 \\ \underline{0} \\ 0.91 \end{array}$$
$$\frac{0.91}{10} = 0.091$$
$$\begin{array}{r} 2.4\bar{3} \\ + 0.091 \\ \hline 2.491 \end{array}$$

$$\begin{aligned} 2. \quad & 2m^2 - 18 \\ & = 2(m^2 - 9) \\ & = \underline{\underline{2(m+3)(m-3)}} \end{aligned}$$

$$\begin{aligned} 3. \quad & f(x) = 5 - x^2 \\ & f(-3) = 5 - (-3)^2 \\ & = 5 - 9 \\ & = \underline{\underline{-4}} \end{aligned}$$

$$\begin{aligned} 4. \quad & 3x + 1 = \frac{x-5}{2} \\ \therefore & 2(3x+1) = x-5 \\ \therefore & 6x + 2 = x - 5 \\ & 6x - x = -5 - 2 \\ & 5x = -7 \\ & x = \underline{\underline{\frac{-7}{5}}} \end{aligned}$$

$$\begin{aligned} 5. \quad & 7 \div \frac{2}{5} \\ & = 7 \times \frac{5}{2} \\ & = \frac{35}{2} \\ & = 17\frac{1}{2} \therefore 17 \text{ cakes.} \end{aligned}$$

6. median of 30: between 15 and 16
 \Rightarrow median = 4

$$\begin{aligned} b) \quad P(T > 4) &= \frac{14}{30} \\ &= \frac{7}{15} \end{aligned}$$

$$\begin{aligned} 7a) \quad & 2a + 4c = 56 \quad \textcircled{1} \\ b) \quad & a + 3c = 36 \quad \textcircled{2} \quad (\times 2) \end{aligned}$$

$$\begin{array}{r} 2a + 4c = 56 \\ - \quad a + 3c = 72 \quad - \\ \hline -2c = -16 \\ \underline{\underline{c = 8}} \end{array}$$

Child: £8

Sub into $\textcircled{2}$: $c = 8$

$$\begin{aligned} a + 3c &= 36 \\ a + 3(8) &= 36 \\ a + 24 &= 36 \\ \underline{\underline{a = 12}} \end{aligned}$$

Adult: £12.

8a) T(0,12) Q(8,8) R(~~8,8~~)
8,0

$$\begin{aligned} m_{TR} &= \frac{y_T - y_R}{x_T - x_R} \\ &= \frac{12 - 0}{0 - 8} \\ &= \frac{12}{-8} \\ &= \underline{\underline{-\frac{3}{2}}} \end{aligned}$$

$$\underline{\underline{y = -\frac{3}{2}x + 12.}}$$

b) $P(x, 8)$ Credit 2011 p1

at $y=8$:

$$8 = -\frac{3}{2}x + 12$$

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

$$-8 = -3x$$

$$\frac{8}{3} = x$$

$$\underline{\underline{P\left(\frac{8}{3}, 8\right)}}$$

9a) $2a \times a^{-4}$

$$= 2a^{-3}$$

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

b) $\sqrt{x} + \sqrt{18} = 4\sqrt{2}$

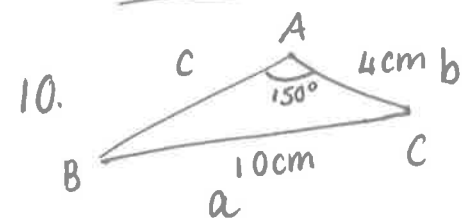
$$\sqrt{x} = 4\sqrt{2} - \sqrt{18}$$

$$\sqrt{x} = 4\sqrt{2} - \sqrt{9 \times 2}$$

$$\sqrt{x} = 4\sqrt{2} - 3\sqrt{2}$$

$$\sqrt{x} = \sqrt{2}$$

$$\underline{\underline{x = 2}}$$



$$\frac{a}{\sin A} = \frac{b}{\sin B} \quad \sin 150^\circ = \sin 30^\circ$$

$$\frac{10}{\sin 30} = \frac{4}{\sin B}$$

$$10 \sin B = 4 \sin 30$$

$$10 \sin B = 4 \times \frac{1}{2}$$

$$\sin B = \frac{2}{10} = \frac{1}{5}$$

11. No longer in course.

12a) $S_{10} = \frac{1}{2}(10 \times 11)$
 $= \frac{1}{2}(110)$
 $= \underline{\underline{55}}$

b) $S_n = \frac{1}{2}(n \times (n+1))$
 $= \underline{\underline{\frac{1}{2}(n^2 + n)}}$

2011 Credit Paper 2

1. 10% increase $\Rightarrow 1.1$
4 weeks $\Rightarrow 1.1^4$

$$\text{distance} = \cancel{28} \times 28 \times 1.1^4$$
$$= \underline{\underline{41 \text{ miles}}}$$

2. $(3x+1)(x^2-5x+4)$

$$= 3x^3 - 15x^2 + 12x + x^2 - 5x + 4$$
$$= \underline{\underline{3x^3 - 14x^2 + 7x + 4}}$$

3. $a=2, b=3, c=-7$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-3 \pm \sqrt{3^2 - 4(2)(-7)}}{2 \times 2}$$

$$x = \frac{-3 \pm \sqrt{9 + 56}}{4}$$

$$x = \frac{-3 + \sqrt{65}}{4} \quad x = \frac{-3 - \sqrt{65}}{4}$$

$$x = 1.26$$

$$x = -2.77$$

$$\underline{\underline{x = 1.3}}$$

$$\underline{\underline{x = -2.8}}$$

4. 84% = 3780

$$1\% = 3780 \div 84$$

$$= 45$$

$$100\% = 45 \times 100$$

$$= \underline{\underline{\pounds 4500}}$$

5. $AL = \frac{x}{360} \times \pi \times d$

$$= \frac{42}{360} \times \pi \times 2.4$$

$$= 0.879 \dots$$

$$= \cancel{0.879} = 0.88 \text{ m}$$

$0.88 < 0.9 \text{ m} \therefore$ does not pass.

6. Scale factor: enlargement

$$S.F. = \frac{125}{90} = \frac{25}{18}$$

$$SF(\text{Area}) = \left(\frac{25}{18}\right)^2$$

$$\text{Area B} = \left(\frac{25}{18}\right)^2 \times 4020$$
$$= \underline{\underline{7755 \text{ cm}^2}}$$

$$4020 \times 2 = 8040$$

$\therefore \text{Area B} \neq 2 \times \text{Area A}$.

Claim is not justified.

7a) Angle ABC = $180 - 72$
 $= \underline{\underline{108^\circ}}$

b)

$$b^2 = a^2 + c^2 - 2ac \cos B$$

$$= 1 + 1 - 2(1)(1) \cos 108$$

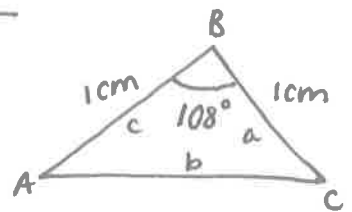
$$= 2.618 \dots$$

$$b^2 = 2.6 \text{ cm}$$

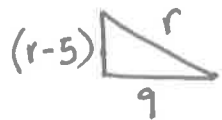
$$b = \sqrt{2.6}$$

$$b = 1.612 \dots$$

$$\underline{\underline{b = 1.6 \text{ cm}}}$$



8.



$$r^2 = (r-5)^2 + 9^2$$

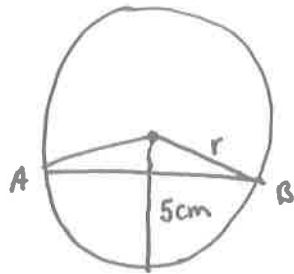
$$r^2 = r^2 - 10r + 25 + 81$$

$$r^2 = r^2 - 10r + 106$$

$$0 = -10r + 106$$

$$10r = 106$$

$$r = 10.6$$



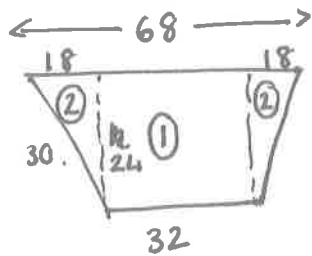
AB = 18 cm

9a)

$$A_1 = 32 \times 24 = 768 \text{ cm}^2$$

$$A_2 = 18 \times 24 = 512 \text{ cm}^2$$

$$\text{Total Area} = 768 + 512 = 1200 \text{ cm}^2$$



Area

b) $V = Ah$ or $V = AL$

$$156,000 = 1200 \times L$$

$$L = \frac{156000}{1200}$$

$$L = 130 \text{ cm}$$

$$156L = 156000 \text{ ml} = 156000 \text{ cm}^3$$

10. x = hourly rate.

$$15x + 8x + 16x = 429$$

$$39x = 429$$

$$x = \frac{429}{39}$$

$$x = 11.$$

$$\text{Tom: } 11 \times 15 = \underline{\underline{£165}}$$

$$\text{Tom} = 15x$$

$$\text{Samia} = 8x$$

$$\text{Harry} = \frac{4}{3} \times 12x = 16x$$

11.

$$A = lb$$

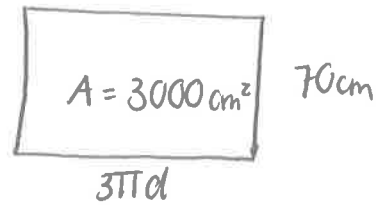
$$3000 = 70 \times 3\pi d$$

$$3000 = 210\pi d.$$

$$d = \frac{3000}{210\pi}$$

$$d = 4.547 \dots$$

$$\underline{\underline{d = 4.5 \text{ cm}}}$$



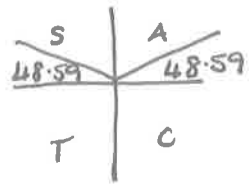
12a) max = 1, min = -7

$$p(90, 1)$$

b) $4\sin x - 3 = 0$

$$4\sin x = 3$$

$$\sin x = 3/4$$



$$x^\circ = 48.59, 180 - 48.59$$

$$x^\circ = 48.6, 131.4^\circ$$

$$\underline{\underline{Q = (48.6)}}$$

$$\underline{\underline{R = (131.4^\circ)}}$$

13.

$$48 - 8t - t^2 = 0$$

$$(12 - t)(4 + t) = 0$$

$$t = 12 \text{ or } t = -4$$

$$\underline{\underline{t = 12 \text{ seconds}}}$$