

$$\begin{aligned} 1) \quad 7 \cdot 18 - 2 \cdot 1 \cdot 3 \\ = 7 \cdot 18 - 6 \cdot 3 \\ = 0.88 \end{aligned}$$

$$\begin{aligned} 2) \quad 1\frac{1}{8} &= \frac{3}{4} \\ &= \frac{1^3}{8^2} \times \frac{1^1}{2^1} \\ &= \frac{3}{2} \end{aligned}$$

$$\begin{aligned} 3) \quad 5-x &> 2(x+1) \\ \Rightarrow 3 &> 3x \\ \Rightarrow x &< 1 \end{aligned}$$

$$\begin{aligned} 4) \quad f(x) &= x^2 + 5x \\ \Rightarrow f(-3) &= (-3)^2 + 5(-3) \\ &= 9 - 15 \\ &= -6 \end{aligned}$$

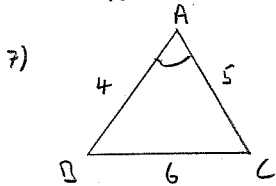
$$5) \quad (a) \quad p^2 - 4q^2 = (p+2q)(p-2q)$$

$$\begin{aligned} (b) \quad \frac{p^2 - 4q^2}{3p+6q} &= \frac{(p+2q)(p-2q)}{3(p+2q)} \\ &= \frac{p-2q}{3} \end{aligned}$$

$$6) \quad L = \frac{1}{2}(h-t)$$

$$\Rightarrow h-t = 2L$$

$$\Rightarrow h = 2L+t$$



$$\begin{aligned} \cos A &= \frac{b^2 + c^2 - a^2}{2bc} \\ &= \frac{5^2 + 4^2 - 6^2}{2 \times 5 \times 4} \\ &= \frac{5}{10} \\ &= \frac{1}{2} \end{aligned}$$

$$\begin{array}{r} 8) \text{ Handed: } \\ \begin{array}{r|l} 1 & 19 \\ 2 & 2559 \\ 3 & 1468 \\ 4 & 069 \\ 5 & 00 \end{array} \end{array}$$

$$\begin{array}{r} 3 \mid 1 = 31 \\ n = 15 \end{array}$$

$$\begin{array}{r} \text{Pasted: } \\ \begin{array}{r|l} 1 & 55 \\ 2 & 12356 \\ 3 & 13479 \\ 4 & 166 \end{array} \end{array}$$

$$\begin{array}{r} 3 \mid 1 = 31 \\ n = 15 \end{array}$$

$$9) \quad f(x) = x^2 + 2x - 1, \quad g(x) = 5x + 3$$

$$f(x) = g(x)$$

$$\Rightarrow x^2 + 2x - 1 = 5x + 3$$

$$\Rightarrow x^2 - 3x - 4 = 0$$

$$\Rightarrow (x+1)(x-4) = 0$$

$$\Rightarrow x = -1 \text{ or } x = 4$$

$$\begin{aligned} 10) \quad \sqrt{27} + 2\sqrt{3} \\ = 3\sqrt{3} + 2\sqrt{3} \\ = 5\sqrt{3} \end{aligned}$$

$$\begin{aligned} 11) \quad y^8 \times (y^3)^{-2} \\ = y^8 \times y^{-6} \\ = y^2 \end{aligned}$$

$$\begin{aligned} 12) \quad y &= mx + c \\ c &= 12 \end{aligned}$$

$$\therefore y = mx + 12$$

$$M_{AB} = \frac{82-12}{90-0}$$

$$= \frac{7}{9}$$

$$\therefore y = \frac{7}{9}x + 12$$

$$\therefore y = \frac{7}{9}h + 12$$

$$13) \quad (a) \quad 4p + 3q = 1.3 \quad -\textcircled{1}$$

$$(b) \quad 2p + 4q = 1.2 \quad -\textcircled{2}$$

$$(c) \quad \textcircled{1} - 2 \times \textcircled{2} : -5q = -1.1$$

$$\Rightarrow q = 0.22$$

$$\text{sub m } \textcircled{2} : 2p + 0.88 = 1.2$$

$$\Rightarrow 2p = 0.32$$

$$\Rightarrow p = 0.16$$

$$\therefore 3p + 2q = 3 \times 0.16 + 2 \times 0.22$$

$$= 0.48 + 0.44$$

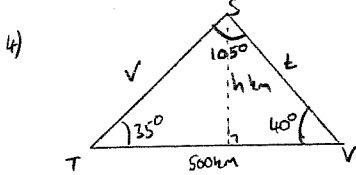
$$= 0.92$$

1) Weight =  $18 \times 14.06 \times 10^{-5}$   
 $= 3.43 \times 10^{-3} \text{ kg (200)}$

2)  $1.175x = 150$   
 $\Rightarrow x = \frac{150}{1.175}$   
 $\Rightarrow x = \pounds 127.66 \text{ (200)}$

3)  $2x^2 + 3x - 7 = 0$   
 $\Rightarrow x = \frac{-3 \pm \sqrt{9 + 56}}{4}$

$\Rightarrow x = 1.3 \text{ or } -2.8 \text{ (100)}$



$\frac{t}{\sin 35} = \frac{500}{\sin 105}$

$\Rightarrow t = \frac{500 \sin 35}{\sin 105}$

$\Rightarrow t = 296.91 \text{ km (200)}$

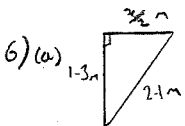
$\sin 40 = \frac{h}{t}$

$\Rightarrow h = t \sin 40$

$\Rightarrow h = 190.8 \text{ km (100)}$

5)  $A_{\text{cross-section}} = 0.6 \times 0.25 + \frac{\pi \times 0.3^2}{2}$   
 $= 0.291 \text{ (300)}$

$\therefore V = 0.291 \times 4$   
 $= 1.2 \text{ m}^3 \text{ (250)}$



$\therefore \frac{x^2}{4} + 1.3^2 = 2.1^2$

$\Rightarrow x^2 = 4(2.1^2 - 1.3^2)$

$\Rightarrow x = 3.3 \text{ m (100)}$

(b)  $0.8 \text{ m}$

7) Braziers: Columbian  
 $2 : 3$

5 parts, each part  $\frac{1000}{5} = 200 \text{ g}$

$\therefore$  each tin:  $400 \text{ g}$  Braziers,  
 $600 \text{ g}$  Columbian.

Braziers:  $\frac{20}{0.4} = 50$ , Columbian:  $\frac{25}{0.6} = 41.7 \text{ (100)}$

$\therefore$  Max number of tins is 41.

8)  $\sin x = 0.4$   
 $\Rightarrow x = 23.6^\circ, 156.4^\circ \text{ (100)}$

$\therefore A(23.6, 0.4), B(156.4, 0.4)$

9) (a) Cost =  $25 \times 3 + 5 \times 7$   
 $= \pounds 110$

(b) Cost =  $75 + 5(m-3)$   
 $= 5m + 60$

(c) Cost =  $80 + 2(m-2)$   
 $= 2m + 76$

(d) True  $\bar{7}$ :  
 $2m + 76 < 5m + 60$   
 $\Rightarrow 3m > 16$   
 $\Rightarrow m > 5.33 \text{ (200)}$   
 $\therefore$  least number of minutes is 6 mins.

10)  $T \propto \frac{v^2}{r}$

(a)  $T = \frac{kv^2}{r}$

(b)  $v \rightarrow 3v$   
 $r \rightarrow \frac{r}{2}$

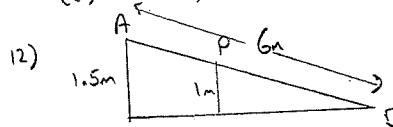
$T \rightarrow \frac{9}{\frac{1}{2}} T$

$\therefore T \rightarrow 18T$

11) (a)  $2^n = 32$   
 $\Rightarrow n = 5$

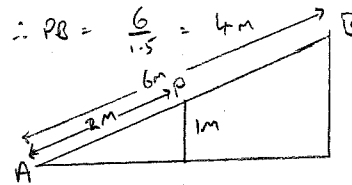
(b) Sum of 5 numbers =  $(1+2+4+8+16) = 32 - 1$

(c) Sum of n numbers =  $(1+2+4+\dots+2^{n-1}) = 2^n - 1$



Scale Factor =  $\frac{1.5}{1} = 1.5$

$\therefore AP = 6 - 4 = 2 \text{ m}$



Scale Factor =  $\frac{6}{2} = 3$

$\therefore$  height =  $3 \times 1 = 3 \text{ m}$