

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

$$\begin{array}{r}
 0.91 \\
 6 \overline{) 5.546}
 \end{array}$$

$$0.91 \div 10 = 0.091$$

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

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

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

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

6(a) Median of 30 values  
is between 15<sup>th</sup> & 16<sup>th</sup>

$$\Rightarrow \text{median} = 4$$

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

$\Rightarrow$  Jamie can bake 17 cakes

$$\begin{aligned}
 7. (a) \quad & 2a + 4c = 56 \quad (1) \\
 (b) \quad & a + 3c = 36 \quad (2) \\
 (c) (i) \quad & 2a + 6c = 72 \quad (2) \times 2 \\
 & - \underline{2a + 4c = 56} \quad (1) \\
 & \quad \quad 2c = 16 \\
 & \quad \quad c = 8
 \end{aligned}$$

$$\begin{aligned}
 (ii) \quad & \text{sub } c = 8 \text{ into } (1) \\
 & 2a + 4(8) = 56 \\
 & 2a + 32 = 56 \\
 & 2a = 24 \\
 & a = 12
 \end{aligned}$$

An adult ticket costs £12

A child ticket costs £8

8. (a)  $T(0, 12)$ ,  $Q(8, 8)$   
so  $R(8, 0)$

$$m_{TR} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m_{TR} = \frac{0 - 12}{8 - 0}$$

$$m_{TR} = -\frac{12}{8}$$

$$m_{TR} = -\frac{3}{2}$$

$$y = mx + c$$

TR:  $y = -\frac{3}{2}x + 12$

(b)  $P(x, 8)$   
when  $y = 8$ ,

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

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

$$-8 = -3x$$

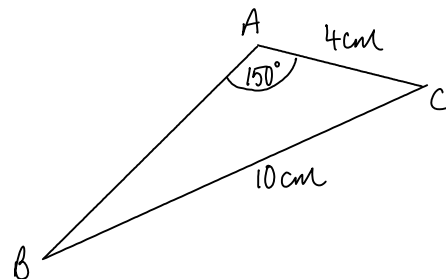
$$x = \frac{8}{3}$$

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

9. (a)  $2a \times a^{-4}$   
 $= 2a^{-3}$

(b)  $\sqrt{x} + \sqrt{18} = 4\sqrt{2}$   
 $\sqrt{x} = 4\sqrt{2} - \sqrt{18}$   
 $\sqrt{x} = 4\sqrt{2} - \sqrt{9 \times 2}$   
 $\sqrt{x} = 4\sqrt{2} - 3\sqrt{2}$   
 $\sqrt{x} = \sqrt{2}$   
 $x = 2$

10.



$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{a}{\sin A} = \frac{b}{\sin B}$$

$$\frac{10}{\sin 150^\circ} = \frac{4}{\sin B} \quad \sin 150^\circ = \sin 30^\circ$$

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

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

$$10 \sin B = 2$$

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

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

$$11. (a) F \propto \frac{s}{d^2}$$

$$F = k \cdot \frac{s}{d^2}$$

$$(b) F = k \cdot \frac{\frac{1}{2}s}{(2d)^2}$$

$$F = k \cdot \frac{\frac{1}{2}s}{4d^2}$$

$$F = k \cdot \frac{s}{8d^2}$$

when  $s$  is halved &

$d$  is doubled,

$F$  is  $\frac{1}{8}$  of the original

(8 times smaller)

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

$$= 55$$

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

$$= \frac{1}{2}(n^2 + n)$$