

Monday

Find:

- $3.6 + 2.4 \times 7$
- $2^{1/2} + 3^{4/5}$
- $2/3$ of $2^{3/4} - 1/3$
- Remove the brackets and simplify:
 - $(2f - 3)(3f + 5)$
 - $(3x + 1)(x - 1) + 2(x^2 - 5)$
- Factorise FULLY:
 - $3y^3 + 15y$
 - $9p^2 - 16$
 - $f^2 - 6f + 9$

Tuesday

Find:

- $39.7 - 1.63 \times 20$
- $5^{1/7} - 4^{2/3}$
- $2/3 + 2^{3/4} \div 5/6$
- Remove the brackets and simplify:
 - $(5h + 2)(h - 3)$
 - $4g + (2g - 1)(g - 5)$
- Factorise FULLY:
 - $8k^2 - 24kp$
 - $4a^2 - 25$
 - $e^2 + 8e + 15$

Thursday

Find:

- $4.23 \times 5 - 17.9$
- $1^{5/6} \div 3/4$
- $2/3 + (2^{3/4} - 5/9)$
- Remove the brackets and simplify:
 - $(3g + 2)^2 - 2g$
 - $(w - 3)(w^2 - 4w + 2)$
- Factorise FULLY:
 - $5k^2 - 20$
 - $a^2 - 3a - 10$
 - $2e^2 + 5e - 3$

Revision

Find:

- $3.1 + 2.6 \times 4$
- $3^{5/8} + 4^{2/3}$
- $2/5$ of $3^{1/2} + 4/5$
- Remove the brackets and simplify:
 - $7(y + 3) + (2y - 3)^2$
 - $(3m + 1)(2m - 5) - 2(m^2 - 3)$
- Factorise FULLY:
 - $12g^2 - 27$
 - $9 - 64b^2$
 - $c^2 + 8e - 20$

Monday

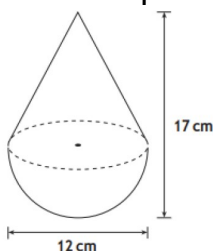
1. A flat is valued at £135,000. If it appreciates at a rate of 2.8% p.a. how much will it be worth after 3 years?
2. After a pay rise, Isla's salary increased from £24,500 to £27,100. Express the increase as a percentage of her original salary.
3. Find the volume (to 3 s.f.) of
 - a. A cylinder with height 8cm and radius 8cm
 - b. A cone with radius 6cm and height 9cm
4. Calculate the radius of a sphere with volume $22,568\text{cm}^3$

Tuesday

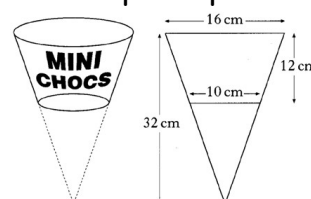
1. Households in a city produce 75,000 tonnes of waste. The total amount of waste is expected to fall by 7.3% per year. Calculate the total amount of waste produced in 4 years time.
2. A car bought for £15,000 is later sold for £9,800. Calculate the decrease as a percentage of the original price.
3. Find the volume (to 3 s.f.) of
 - a. A hemi-sphere with radius 5.3cm
 - b. A cone with diameter 16cm and height 19cm
4. Calculate the height of a cone with a radius of 7 cm and a volume $15,800\text{cm}^3$

Thursday

1. A charity distributed 35,000 emergency packs during 2018. This number is expected to increase by 12% each year. How many packs will they expect to distribute in 2023?
2. A theatre group sold 4830 tickets, this was 15% more than last year. How many did they sell last year?
3. Find the volume of a child's toy with a cone on top of a hemisphere.

**Weekend/Extension**

1. A drinks manufacturer is reducing the sugar, by 9% each year for 3 years, of its fizzy drink. The sugar content is currently 45g. Calculate the sugar content after 3 years?
2. James paid £297.50 for a laptop in the sale. The discount in the sale was 15%. Calculate the original price.
3. A container to hold chocolates is in the shape of part of a cone.



Find the volume to 2 sig. figures.

Monday

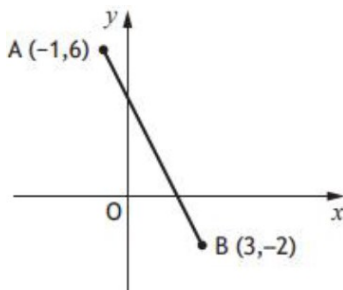
- Find the equation of the line passing through the points $(-3, 5)$ and $(7, 1)$.
- A straight line has equation $3y - 7x = 9$. Find:
 - The gradient
 - The coordinates of the y-intercept
- A straight line has equation $2y + 4x = 16$. Find where the line crosses the **x-axis**.
- Change the subject of the formula $F = 2a - b$, to a .
- Change the subject of the formula $K = 3P^2 + 2$, to P .

Tuesday

- Find the equation of the line passing through the points $(-4, 2)$ and $(-1, 4)$.
- A straight line has equation $3x + 2y - 4 = 0$. Find the gradient of this line.
- A straight line has equation $2x - 5y = 20$. Find the coordinates of the point where the line crosses the **y-axis**.
- Change the subject of the formula $y = g\sqrt{x} + h$, to x .
- Change the subject of the formula $F = t^2 - 4c$, to c .

Thursday

- Find the equation of the line AB shown below.



- A straight line has equation $2x - 3y = 15$. Find:
 - The gradient
 - The coordinates of the y-intercept
- Change the subject of the formula $D = \frac{k - m}{t}$ to k .

Weekend/Extension

- Find the equation of the line joining the points $(-2, 5)$ and $(3, 15)$.
- A straight line has equation $5y - 3x = 21$. Find where the line crosses the **x-axis**.
- Change the subject of the formula $m = 3p + 4b$, to p .
- Change the subject of the formula $p = \frac{mv^2}{2}$, to v .

Monday

- Solve the simultaneous equations
 - $2x + 4y = 24$
 $7x - 2y = 4$
 - $5x + y = -2$
 $3x + 2y = 3$
- Find the mean and standard deviation (s.d.) of:- 3 4 4 7 10
- The number of cars sold over a year by each salesman at a local garage was recorded as:
7 15 10 24 3 10
 - Find the mean and s.d.
 - The salesmen were then given training to help improve their sales. The next they had a mean of 19 and a SD of 6.63. Make two comparisons between the data.

Tuesday

- Solve the simultaneous equations
 - $4x - 3y = 18$
 $2x + 6y = -6$
 - $2x - 3y = 10$
 $3x - 6y = 18$
- Find the mean and standard deviation (s.d.) of:- 8 10 15 16 17
- The number of salmon caught in a local river over a 6-week period was recorded as:
13 22 29 39 32 27
 - Find the mean and s.d.
 - A year later, the number of salmon caught over the same 6-week period had a mean of 18 and a SD of 5.66. Make two comparisons between the data.

Thursday

- Solve the simultaneous equations
 - $2x + 3y = 1$
 $5x - 2y = -26$
 - $2a - 8b = 0$
 $5a - 5b = 15$
- Find the mean and standard deviation (s.d.) of:- 10 15 9 18 22
- Five sunflowers were grown from seeds and their maximum heights (cm) were recorded as: 69 85 72 51 65
 - Find the mean and s.d.
 - After adding a new plant food the next batch of sunflowers had a mean height of 92.2 cm with a SD of 7.79. Make two comparisons between the data.

Weekend/Extension

- Solve the simultaneous equations
 - $-2x + 3y = 6$
 $9x - 7y = -1$
 - $3a + 2b = -11$
 $4a + 3b = -14$
- Find the mean and standard deviation (s.d.) of:- 70 76 72 91 77
- At 8am on Monday, the temperature ($^{\circ}\text{C}$) in 5 classrooms was recorded as:
18.5 19.1 17.2 18.9 18.8
 - Find the mean and s.d.
 - The heating was then turned on and the following week the mean temperature was 20°C with a SD of 1.09°C . Make two comparisons between the data.

Monday

- Multiply the brackets and simplify
 - $(2x + 1)(x - 3)$
 - $4h + (h - 4)^2$
 - $5 - (3x - 2)(x + 5)$
 - $(x + 3)(5x^2 - x - 1)$
- In a local cafe, Claire ordered 3 teas and 2 coffees which cost her £6.60. Jemma ordered 2 teas and 1 coffee which cost her £3.92. Find the cost of a tea and a coffee.
- Express with a rational denominator in it's simplest form:
 - $\frac{4}{\sqrt{3}}$
 - $\frac{3}{\sqrt{5}}$

Tuesday

- Multiply the brackets and simplify
 - $(3x + 2)(x - 5)$
 - $5h + (2h - 1)^2$
 - $8 - (2x - 1)(2x + 3)$
 - $(7a^2 + 2a - 1)(5 - 2a)$
- In a local cafe, Claire ordered 2 teas and 1 coffee which cost her £3.55. Jemma ordered 3 teas and 2 coffees which cost her £5.95. Find the cost of a tea and a coffee.
- Simplify
 - $\sqrt{12}$
 - $\sqrt{45}$
 - $\sqrt{3} + \sqrt{27}$
 - $7\sqrt{5} - \sqrt{20}$

Thursday

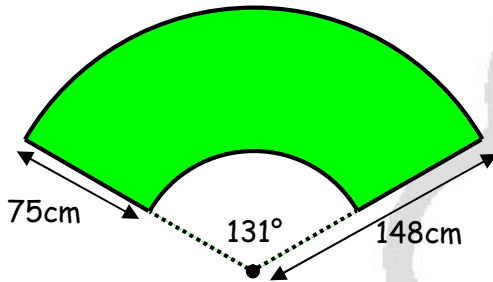
- Multiply the brackets and simplify
 - $(5x + 2)(3x - 1)$
 - $(7m - 3)(m + 6)$
 - $3x + 5(x + 3)(x - 1)$
 - $(4x - 1)(2x^2 - 3x - 5)$
- John bought 7 bags of cement and 3 bags of gravel, the weight was 215kg. Shona bought 5 bags of cement and 4 bags of gravel, the weight was 200kg. Find the weight of a bag of cement and a bag of gravel.
- Express with a rational denominator in it's simplest form:
 - $\frac{3}{\sqrt{2}}$
 - $\frac{7}{\sqrt{6}}$

Weekend/Extension

- Multiply the brackets and simplify
 - $(5x + 4)(x - 6)$
 - $15 - (5x - 2)(3x + 1)$
 - $7x + 2(2x + 3)(3x - 1)$
 - $(4x + 3)(2x^2 - 5x - 1)$
- In a local cafe, Claire ordered 3 teas and 2 coffees which cost her £5.55. Jemma ordered 4 teas and 1 coffee which cost her £5.40. Find the cost of a tea and a coffee.
- Simplify
 - $\sqrt{75}$
 - $\sqrt{32}$
 - $\sqrt{24} + \sqrt{600}$
 - $9\sqrt{3} - \sqrt{27}$

Monday

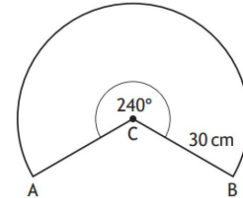
- Find the area of a circle sector with angle 45° and radius 6.3cm
- Find the area of the shaded section below.



- Simplify:
 - $b^3 \times b^2$
 - $4a^3 \times 5a^{-5}$
 - $3h^2 \times 2h^4$
 - $g^6 \div g^2$
 - $15y^4 \div 3y^2$

Tuesday

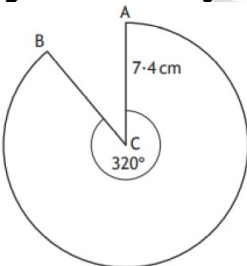
- Find the length of the arc below, take $\pi = 3.14$ (non-calc)



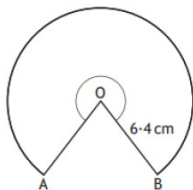
- Simplify:
 - $2h^3 \times 6h^2$
 - $g^5 \div g^3$
 - $6y^7 \div 2y^6$
 - $(4i^3)^2$
 - $(j^4)^{-3}$
 - $12r^8 \div 3r^5$
 - $\frac{5w^{10} \times 2w^{-3}}{4w^5}$

Thursday

- Find the length of the **major** arc below.



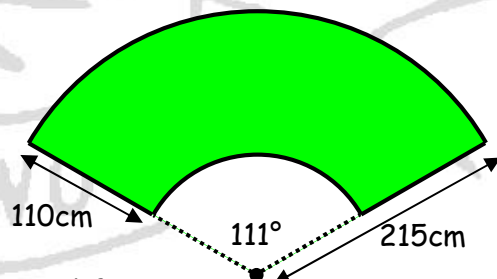
- The major arc AB has length 31.5cm. Find the size of the reflex angle AOB.



- Simplify and express with a positive index:
 - $4g^{-3} \times 2g^5$
 - $(2e^3)^2$
 - $(n^2)^3 \times n^{-10}$

Weekend/Extension

- Find the area of a circle sector with angle 217° and radius 8.6cm
- Find the area of the shaded section below.



- Simplify
 - $2b^4 \times 5b^2$
 - $a^8 \times a^{-8}$
 - $5h^3 \times 3h^4$
 - $3g^7 \div 9g^3$
 - $5y^7 \div y^6$
 - $(3j^2)^3$
 - $8r^9 \div 4r^2$

Monday

- Fully factorise
 - $16p^2 - 25q^2$
 - $x^2 + 8x + 15$
 - $a^2 - 9a + 20$
 - $5a^2 - 20b^2$
 - $5u^2 + 15u + 10$
 - $3x^2 + 14x - 5$

- Express in the form $(x + a)^2 + b$
 - $x^2 + 6x - 7$
 - $x^2 - 10x + 2$

- For the function $f(x) = 4x + 4$, find,
 - $f(4)$
 - $f(25)$
 - If $f(a) = 68$, find 'a'

Tuesday

- Fully factorise
 - $9p^2 - 16q^2$
 - $a^2 - 7a + 12$
 - $w^2 + 6w - 27$
 - $5x^3 - 20x$
 - $3x^2 - 24x - 60$
 - $2x^2 + 7x - 4$

- Express in the form $(x + a)^2 + b$
 - $x^2 + 4x + 1$
 - $x^2 - 2x - 3$

- For the function $f(x) = 3x - 2$, find,
 - $f(3)$
 - $f(-5)$
 - If $f(p) = 40$, find 'p'

Thursday

- Fully factorise
 - $9 - 25x^2$
 - $a^2 - 10a + 16$
 - $3a^2 - 48b^2$
 - $2x^4 - 2x^2$
 - $4x^2 - 4x - 80$
 - $5x^2 + 14x - 3$

- Express in the form $(x + a)^2 + b$
 - $x^2 + 12x - 2$
 - $x^2 - 8x + 5$

- For the function $f(x) = 5x^2$, find,
 - $f(0)$
 - $f(-2)$
 - If $f(m) = 125$, find 'm'

Weekend/Extension

- Fully factorise
 - $49 - 4x^2$
 - $a^2 - 9a + 20$
 - $5a^2 - 20b^2$
 - $3u^2 + 9u - 12$
 - $2x^2 - 2x - 144$
 - $3x^2 - x - 14$

- Express in the form $(x + a)^2 + b$
 - $x^2 + 2x + 3$
 - $x^2 - 14x - 1$

- For the function $f(x) = 3x^2 - 2$, find,
 - $f(3)$
 - $f(20)$
 - If $f(t) = 46$, find 't'

Monday

1. Simplify

a. $\frac{x^2 - 9}{x + 3}$

b. $\frac{x - 4}{x^2 - 8x + 16}$

2. Express as a single fraction in its simplest form

a. $\frac{2}{x} + \frac{4}{y}$

b. $\frac{3}{m} + \frac{5}{m-3}$

c. $\frac{3}{x+2} - \frac{3}{x-3}$

d. $\frac{5ab^2}{2} \times \frac{4}{ab}$

3. An insect weighs $2.14 \times 10^{-4}g$. In a day it consumes 5.7 times its weight in food. How much does it weigh after eating?**Tuesday**

1. Simplify

a. $\frac{x-4}{x^2-16}$

b. $\frac{2x+14}{x^2+4x-21}$

2. Express as a single fraction in its simplest form

a. $\frac{5}{g} - \frac{2}{h}$

b. $\frac{6}{h-2} + \frac{2}{h}$

c. $\frac{3}{x-5} - \frac{1}{x-2}$

d. $\frac{4fg}{3} \times \frac{12}{fg^2}$

3. An asteroid travels at a speed of 3.85×10^4 meters per second. How far, in meters, does it travel in 2 hours? Give your answer in standard form.**Thursday**

1. Simplify

a. $\frac{4x^2 - 9}{2x + 3}$

b. $\frac{3x + 6}{x^2 - 13x - 30}$

2. Express as a single fraction in its simplest form

a. $\frac{8e^2f}{3} \times \frac{9e}{4f^4}$

b. $\frac{7}{x} + \frac{2}{x+5}$

c. $\frac{3}{y-4} - \frac{3}{y+1}$

d. $\frac{7}{x^2} + \frac{4}{x}$

3. A planet is 2.825×10^6 kilometers from the sun. Another planet is 16 times further away. How far away from the sun is the other planet? Give your answer in standard form.**Weekend/Extension**

1. Simplify

a. $\frac{x^2 - 2x - 8}{x - 4}$

b. $\frac{5x^2 - 45}{x^2 - 8x + 15}$

2. Express as a single fraction in its simplest form

a. $\frac{a}{7} + \frac{b}{xy}$

b. $\frac{8}{m} - \frac{5}{m-7}$

c. $\frac{6}{x+5} + \frac{2}{x-8}$

d. $\frac{8}{3x^2} \div \frac{4}{xy}$

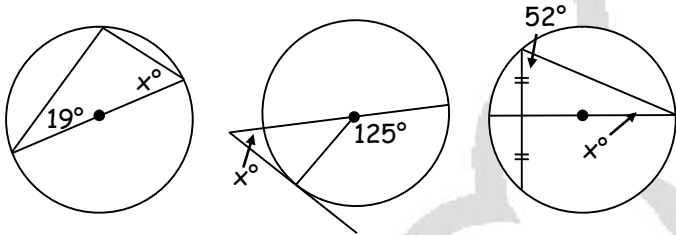
3. When empty, a supertanker weighs 2.46×10^6 kg. A skyscraper weighs 2.23×10^8 kg. How much heavier is the skyscraper than the supertanker? Give your answer in standard form.

Monday

1. Points P, Q and R have coordinates (2, -4, -3), (-1, -2, 5) and (6, 3, 1) respectively. Find the components of

- a. $\mathbf{p + q}$ b. $\mathbf{2q + r}$
 c. $\mathbf{3r - p}$ d. $\mathbf{3q - 2r}$

2. Find the value of x° in each shape below.



3. Simplify, expressing with a positive index

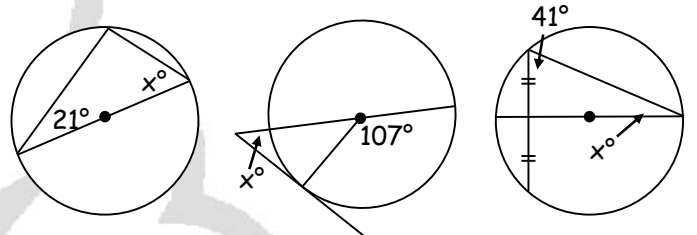
- a) $3h^2 \times 2h^4$
 b) $9g^2 \div 3g^6$
 c) $(4j^5)^3$
 d) $6r^7 \div 2r^3$
 e) $12w^5 \div 4w^8$

Tuesday

1. Points P, Q and R have coordinates (1, -2, 3), (3, 3, -2) and (1, 2, 1) respectively. Find the components of

- a. $\mathbf{p - q}$ b. $\mathbf{q - 2r}$
 c. $\mathbf{2r - p}$ d. $\mathbf{4q - r}$

2. Find the value of x° in each shape below.



3. Simplify, expressing with a positive index

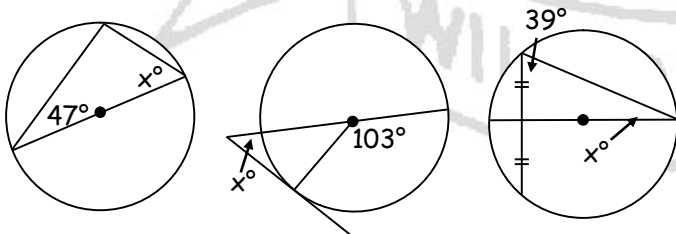
- a) $6y^9 \div y^6$
 b) $(12k^2i^3)^2$
 c) $12r^5 \div 3r^5$
 d) $25w^{10} \div 5w^6$
 e) $4z \div 3z^2$

Thursday

1. Points P, Q and R have coordinates (9, -1, 2), (3, -2, 2) and (3, 4, 5) respectively. Find the components of

- a. $\mathbf{2p + q}$ b. $\mathbf{q + r}$
 c. $\mathbf{2r - 2p}$ d. $\mathbf{2q - r}$

2. Find the value of x° in each shape below.



3. Simplify, expressing with a positive index

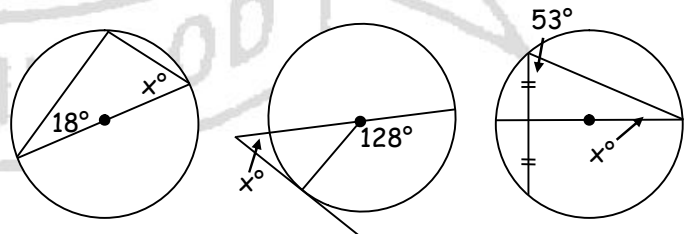
- a) $9y^{-6} \div y^5$
 b) $(i^4)^{-3}$
 c) $(2j^2)^6$
 d) $10r^7 \div 2r^5$
 e) $27w^{12} \div 3w^9$

Weekend/Extension

1. Points P, Q and R have coordinates (4, -1, -3), (-3, 3, -2) and (2, 3, 4) respectively. Find the components of

- a. $\mathbf{p + 3q}$ b. $\mathbf{q + 3r}$
 c. $\mathbf{2r - p}$ d. $\mathbf{4q - 2r}$

2. Find the value of x° in each shape below



3. Simplify, expressing with a positive index

- a) $b^4 \times b^2$
 b) $a^8 \times a^{-8}$
 c) $5h^3 \times 3h^4$
 d) $g^7 \div g^3$
 e) $5y^7 \div y^6$

Monday

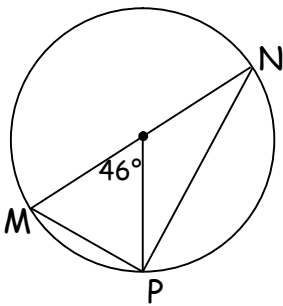
1. Solve the following equations:-

a. $\frac{1}{2}(r-1) = \frac{5}{4}$ b. $\frac{1}{4} = \frac{1}{3}x - \frac{5}{6}$

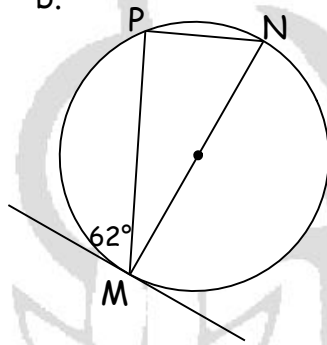
c. $\frac{4z-6}{5} = \frac{z}{4}$

2. Find the size of the angle MNP in each circle shown below

a.



b.



Tuesday

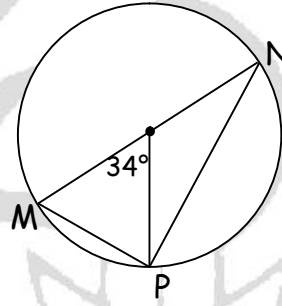
1. Solve the following equations:-

a. $\frac{a}{3} + \frac{5}{2} = 4$ b. $\frac{c+4}{7} - \frac{c}{4} = \frac{5}{2}$

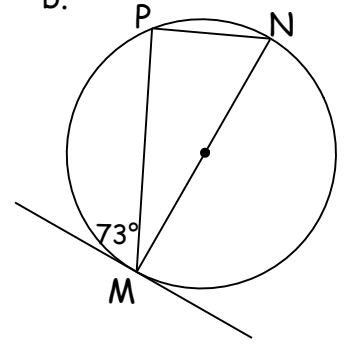
c. $\frac{3s-2}{4} = \frac{s+5}{10}$

2. Find the size of the angle MNP in each circle shown below

a.



b.



Thursday

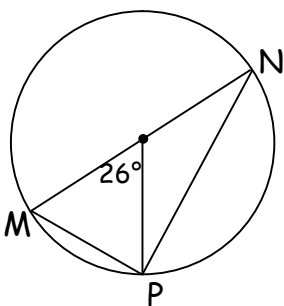
1. Solve the following equations:-

a. $\frac{y+1}{2} = \frac{2y}{3}$ b. $\frac{2}{5}(w-8) = \frac{3}{10}(1-w)$

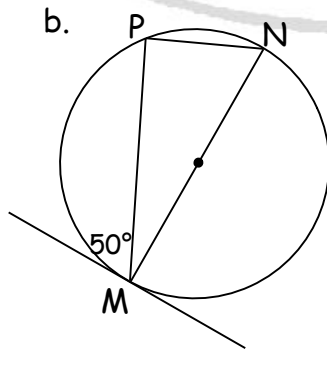
c. $\frac{3(s+1)}{5} = \frac{11}{6}$

2. Find the size of the angle MNP in each circle shown below

a.



b.



Weekend/Extension

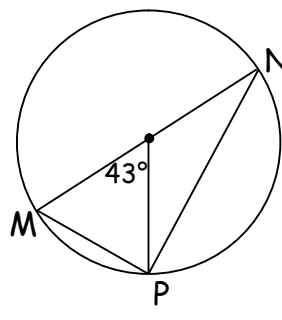
1. Solve the following equations:-

a. $\frac{7(x+2)}{9} = \frac{8x}{3}$ b. $\frac{t}{2} + \frac{t-2}{4} = \frac{1}{5}$

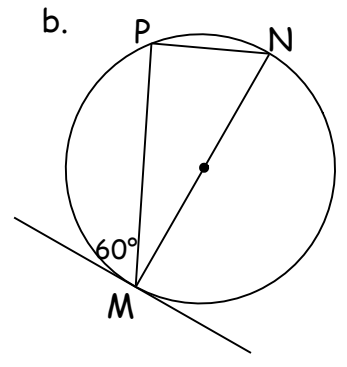
c. $\frac{3(s+1)}{5} = \frac{11}{6}$

2. Find the size of the angle MNP in each circle shown below

a.

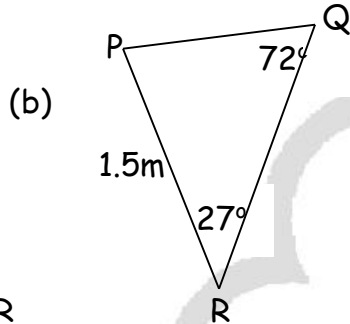
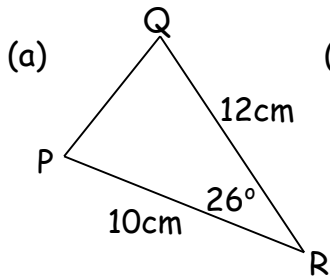


b.

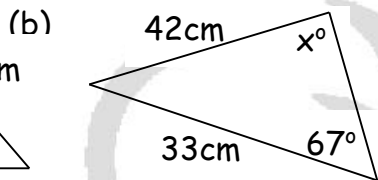
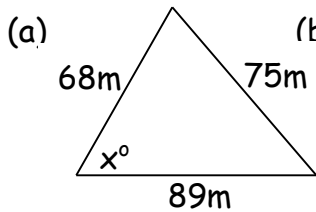


Monday

1. For each of the triangles below, find the length of PQ



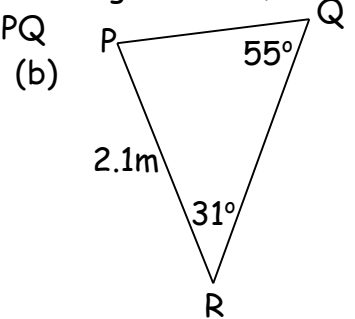
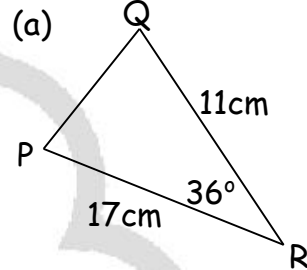
2. For each of the triangles below, find x



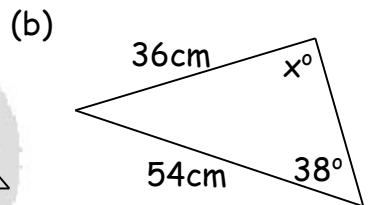
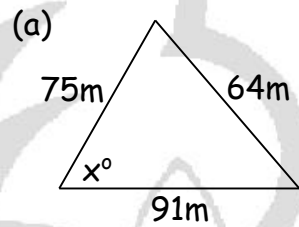
3. Evaluate a. 3^{-3} b. $8^{\frac{2}{3}}$ c. $25^{\frac{1}{2}}$

Tuesday

1. For each of the triangles below, find the length of PQ



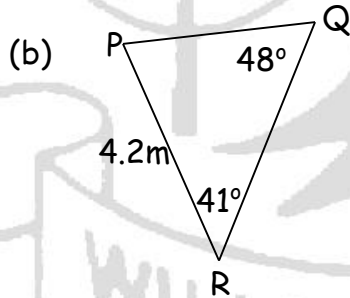
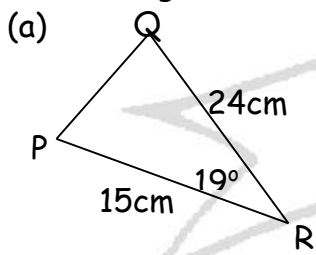
2. For each of the triangles below, find x



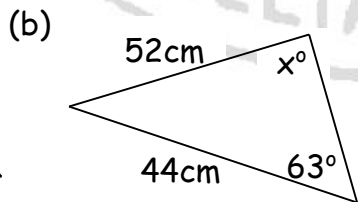
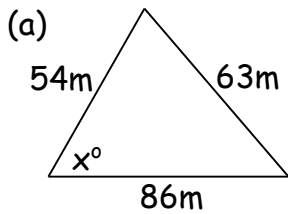
3. Evaluate a. 6^{-2} b. $27^{\frac{1}{3}}$ c. $64^{\frac{2}{3}}$

Thursday

1. For each of the triangles below, find the length of PQ



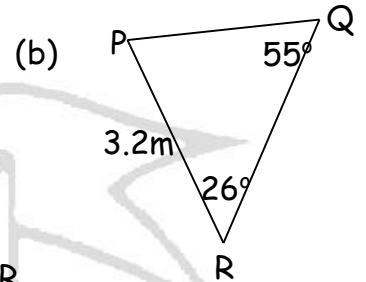
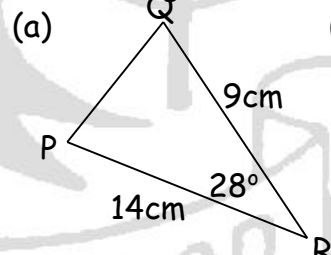
2. For each of the triangles below, find x



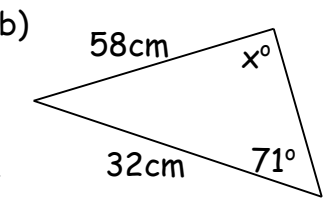
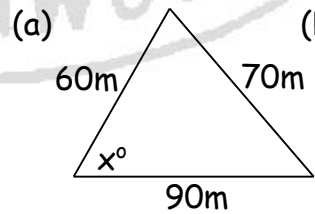
3. Evaluate a. 8^{-2} b. $121^{\frac{1}{2}}$ c. $16^{\frac{3}{4}}$

Weekend/Extension

1. For each of the triangles below, find the length of PQ



2. For each of the triangles below, find x



3. Evaluate a. 3^{-4} b. $100^{\frac{1}{2}}$ c. $125^{\frac{2}{3}}$

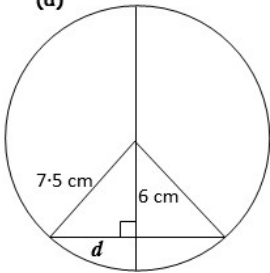
Monday

1. Simplify

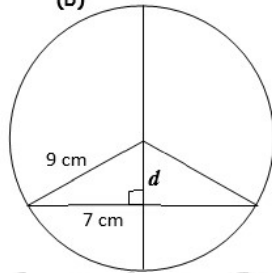
- a. $\sqrt{8}$
- b. $\sqrt{28}$
- c. $\sqrt{2} + \sqrt{18}$
- d. $4\sqrt{3} - \sqrt{12}$
- e. $\sqrt{40} + 4\sqrt{10} + \sqrt{90}$
- f. $\sqrt{45} - \sqrt{20}$
- g. $\frac{\sqrt{8}}{\sqrt{2}}$

2. Calculate the length of 'd' in each circle:-

(a)



(b)



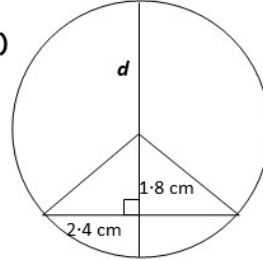
Tuesday

2. Simplify

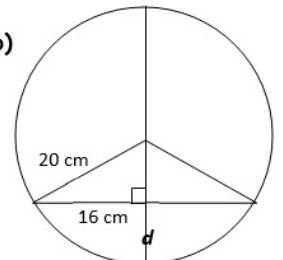
- a. $\sqrt{12}$
- b. $\sqrt{45}$
- c. $\sqrt{3} + \sqrt{27}$
- d. $7\sqrt{5} - \sqrt{20}$
- e. $\sqrt{50} + 8\sqrt{2} - \sqrt{98}$
- f. $\sqrt{200} - \sqrt{18}$
- g. $\frac{\sqrt{80}}{\sqrt{5}}$

3. Calculate the length of 'd' in each circle:-

(a)



(b)



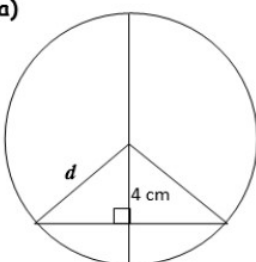
Thursday

1. Simplify

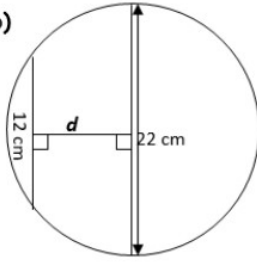
- e. $\sqrt{75}$
- f. $\sqrt{32}$
- g. $\sqrt{24} + \sqrt{600}$
- h. $9\sqrt{3} - \sqrt{27}$
- i. $\sqrt{32} + 2\sqrt{8}$
- j. $2\sqrt{5} - \sqrt{20} + \sqrt{500}$
- k. $\frac{\sqrt{24}}{\sqrt{3}}$

2. Calculate the length of 'd' in each circle:-

(a)



(b)



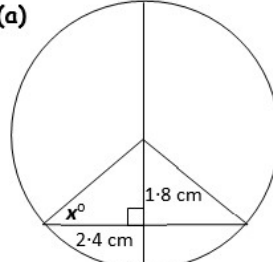
Extension

1. Simplify

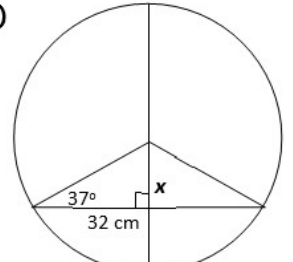
- a. $\sqrt{48}$
- b. $\sqrt{490}$
- c. $\sqrt{2} + \sqrt{18}$
- d. $2\sqrt{5} + \sqrt{20} - \sqrt{45}$
- e. $\sqrt{12} + 5\sqrt{3} - \sqrt{27}$
- f. $\sqrt{18} - \sqrt{2} + \sqrt{72}$
- g. $\frac{\sqrt{27}}{\sqrt{3}}$

2. Calculate the size of 'x' in each circle:-

(a)



(b)



Monday

Change the subject to the letter in brackets

1. $a + 5x = c$ [a]

2. $V = IR$ [I]

3. $y = 7x + 1$ [x]

4. $g = 1 - hj$ [h]

5. $y = \frac{x}{4}$ [x]

6. $t = \frac{v-u}{a}$ [a]

Find:- (Non-Calc!)

7. $1\frac{3}{4} \times 2\frac{5}{12} + 3\frac{5}{6}$

8. $\left(2\frac{2}{3} - 1\frac{3}{4}\right) \times 4$

Tuesday

Change the subject to the letter in brackets

1. $a + 3x = d$ [x]

2. $K = LM$ [L]

3. $y = 4x + 2$ [x]

4. $g = a - hj$ [j]

5. $d = b + 2\sqrt{h}$ [h]

6. $s = t^2v - 2x$ [v]

Find:- (Non-Calc!)

7. $2\frac{1}{16} - 1\frac{3}{5} + 6\frac{1}{2}$

8. $\left(1\frac{1}{3}\right)^2 \div \frac{4}{5}$

Thursday

Change the subject to the letter in brackets

1. $a^2 + 5x = c$ [a]

1. $g = fd - hj$ [d]

2. $f = \frac{r-2p}{q}$ [q]

3. $y = 7x^3$ [x]

4. $d = 3 - \sqrt{ah}$ [h]

5. $s = t^2v - 2x$ [x]

Find:- (Non-Calc!)

6. $\left(3\frac{1}{7} \times 8\frac{3}{4}\right) - 2\frac{1}{3}$

7. $\left(\frac{2}{3} - \frac{1}{6}\right)^3$

Extension

Change the subject to the letter in brackets

2. $y = \frac{3uv}{2x}$ [u]

3. $t = \frac{5a}{r-2p}$ [v]

4. $f = \frac{q}{r}$ [r]

5. $3y = 9x^2$ [x]

6. $d = 5\sqrt{k}$ [k]

7. $s = t^2v - 2ax$ [a]

Find:- (Non-Calc!)

8. $1\frac{5}{12} \div \left(3\frac{1}{5} + 1\frac{1}{3}\right)$

Monday

1. Simplify

a. $\frac{4x^2 - 9}{2x + 3}$

b. $\frac{x - 4}{x^2 - 8x + 16}$

2. Express as a single fraction in its simplest form

a. $\frac{4}{x+2} - \frac{3}{x-3}$

b. $\frac{5ab^2}{2} \times \frac{4}{ab}$

3. For each parabola, state the turning point and calculate the y-intercept.

a. $y = (x - 2)^2 + 16$

b. $y = x^2 - 24$

c. $y = 14 - (x + 3)^2$

Tuesday

4. Simplify

a. $\frac{3x - 1}{9x^2 - 1}$

b. $\frac{2x + 14}{x^2 + 4x - 21}$

5. Express as a single fraction in its simplest form

a. $\frac{6}{h-2} + \frac{2}{h}$

b. $\frac{4fg}{3} \div \frac{12}{fg^2}$

6. For each parabola, state the turning point and calculate the y-intercept.

a. $y = (x + 7)^2 - 19$

b. $y = (x - 1)^2$

c. $y = 4 - (x - 9)^2$

Thursday

1. Simplify

a. $\frac{121w^2 - 36x^2}{11w + 6x}$

b. $\frac{5x^2 - 45}{x^2 - 8x + 15}$

2. Express as a single fraction in its simplest form

a. $\frac{8e^2f}{3} \times \frac{9e}{4f^4}$

b. $\frac{7}{x^2} + \frac{4}{x}$

3. For each parabola, state the turning point and calculate the y-intercept.

a. $y = (x - 2)^2 - 1$

b. $y = x^2 + 45$

c. $y = -6 - (x + 2)^2$

Weekend/Extension

4. Simplify

a. $\frac{x^2 - 2x - 8}{x - 4}$

b. $\frac{3x + 6}{x^2 - 13x - 30}$

5. Express as a single fraction in its simplest form

a. $\frac{a}{7} + \frac{b}{xy}$

c. $\frac{6}{x+5} + \frac{2}{x-8}$

c. $\frac{8}{3x^2} \div \frac{4}{xy}$

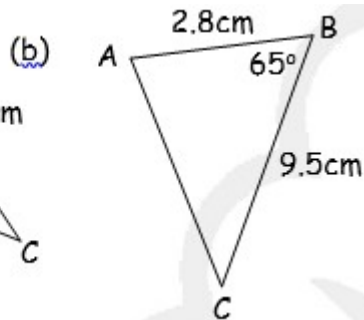
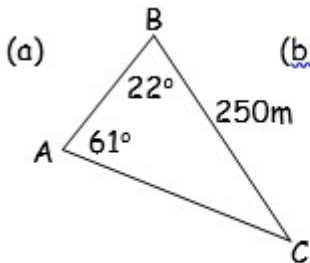
6. For each parabola, state the turning point and calculate the y-intercept.

a. $y = (x + 5)^2 - 6$

b. $y = (x + 3)^2$

Monday

1. For each of the triangles below, find the length of AC



2. Express in the form $(x + a)^2 + b$

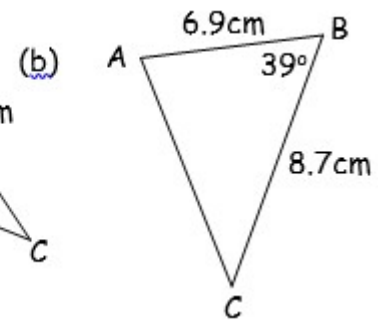
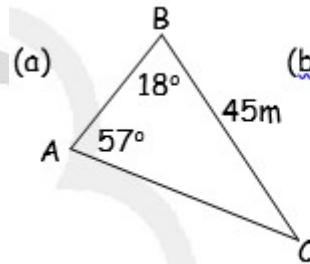
a. $x^2 + 6x + 7$

b. $x^2 - 10x + 2$

c. $x^2 - 3x + 2$

Tuesday

1. For each of the triangles below, find the length of AC



2. Express in the form $(x + a)^2 + b$

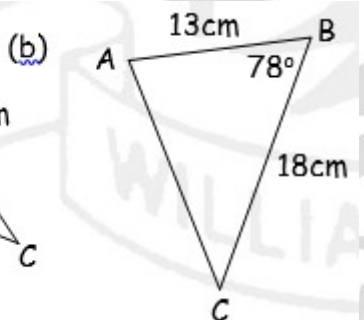
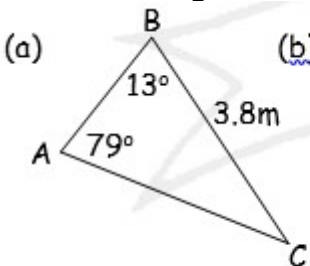
a. $x^2 + 4x - 1$

b. $x^2 - 12x + 2$

c. $x^2 - 5x + 3$

Thursday

1. For each of the triangles below, find the length of AC



2. Express in the form $(x + a)^2 + b$

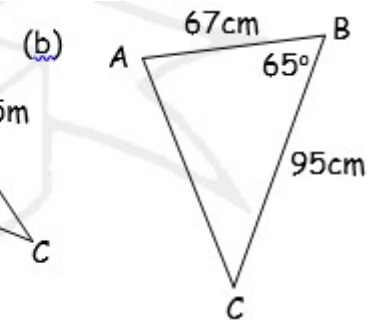
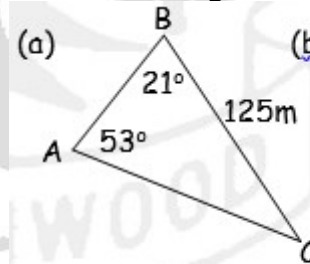
a. $x^2 + 12x + 2$

b. $x^2 - 8x - 5$

c. $x^2 - x + 5$

Weekend/Extension

1. For each of the triangles below, find the length of AC



2. Express in the form $(x + a)^2 + b$

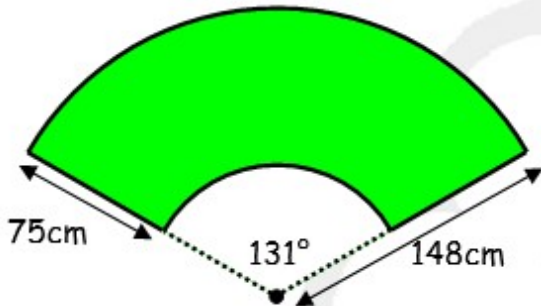
a. $x^2 + 2x + 3$

b. $x^2 - 14x + 5$

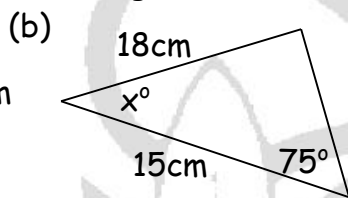
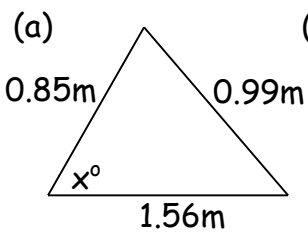
c. $x^2 - 9x + 5$

Monday

1. Find the area of the shaded section below:

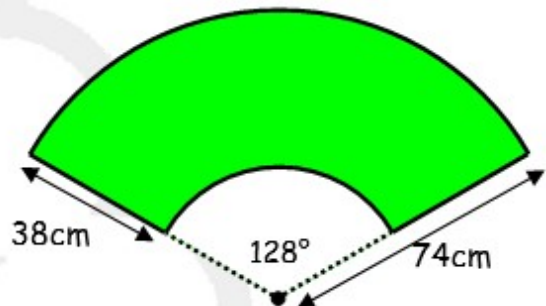


2. For each of the triangles below, find x

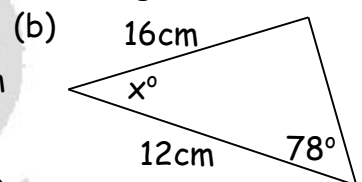
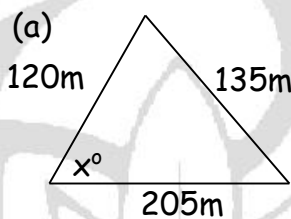


Tuesday

1. Find the area of the shaded section below

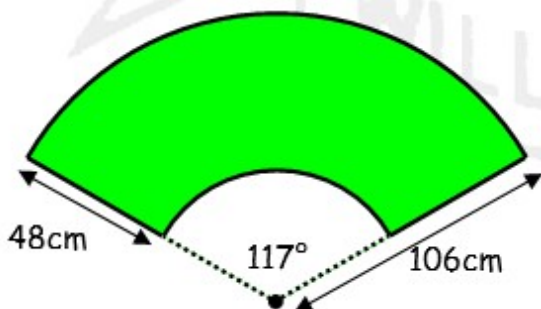


2. For each of the triangles below, find x

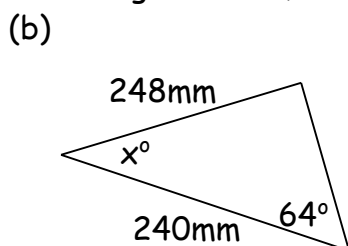
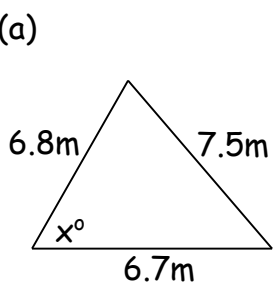


Thursday

1. Find the area of the shaded section below:

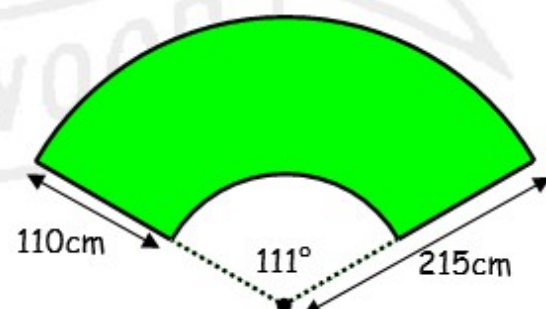


2. For each of the triangles below, find x

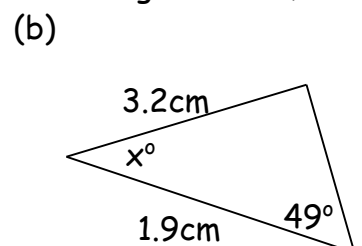
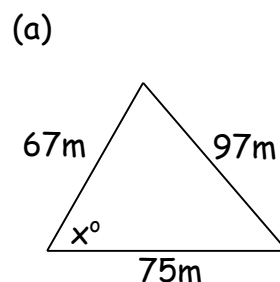


Weekend/Extension

1. Find the area of the shaded section below



2. For each of the triangles below, find x



Monday

- Solve the simultaneous equations
 - $3x + 4y = -7$
 $2x + y = -3$
 - $3p - 2q = 11$
 $7p + 8q = 51$
- Find the intersection of
 - $4x + 3y = 5$ and $10x - 2y = 3$
 - $11x - 3y = 8$ and $9x + 4y = 13$
- After a pay rise, Iona's salary increased from £24,510 to £27,109. Express the increase as a percentage of her original salary.
- For each parabola, state the turning point and calculate the y-intercept.
 - $y = (x - 1)^2 + 10$
 - $y = (x + 2)^2 - 24$

Tuesday

- Solve the simultaneous equations
 - $5x + 2y = 11$
 $3x - 4y = 17$
 - $7p - 3q = 45$
 $2p + 4q = 8$
- Find the intersection of
 - $3x + 4y = -9$ and $5x - 3y = 14$
 - $2x - y = 11$ and $7x - 5y = 34$
- After a pay rise, Louise's salary increased from £18,500 to £22,350. Express the increase as a percentage of her original salary.
- For each parabola, state the turning point and calculate the y-intercept.
 - $y = (x + 7)^2 - 5$
 - $y = x^2 - 13$

Thursday

- Solve the simultaneous equations
 - $2x - 3y = 23$
 $7x + 6y = -2$
 - $4p - q = 16$
 $2p - 5q = 26$
- Find the intersection of
 - $4x + y = 22$ and $3x - 7y = 1$
 - $2x - 6y = 4$ and $7x - 4y = -20$
- After a pay rise, George's salary increased from £6,118 to £7,305. Express the increase as a percentage of his original salary.
- For each parabola, state the turning point and calculate the y-intercept.
 - $y = (x + 4)^2 - 4$
 - $y = 10 - (x - 9)^2$

Weekend/Extension

- Solve the simultaneous equations
 - $6x + 2y = 14$
 $3x + 4y = 1$
 - $3p - 2q = -19$
 $3p - 7q = -29$
- Find the intersection of
 - $3x - 2y = -5$ and $5x + y = 22$
 - $7x - 5y = -27$ and $3x - 4y = -6$
- After a change in job, Martin's salary decreased £31,500 to £30,657. Express the decrease as a percentage of her original salary.
- For each parabola, state the turning point and calculate the y-intercept.
 - $y = (x - 2)^2 + 16$
 - $y = -25 - (x + 0.5)^2$

Monday

1. A house is valued at £135,000. If it appreciates at a rate of 2.8% p.a. how much will it be worth after 7 years.
2. A factory produces 4,780 tonnes of CO_2 emissions. If it reduces it's emissions by 11.3% per annum after how many years will it be till it's emissions have halved?
3. Solve the following quadratic equations by factorising:
 - a. $x^2 + 5x = 0$
 - b. $x^2 - 64 = 0$
 - c. $x^2 + 2x - 3 = 0$
 - d. $2x^2 - 5x - 12 = 0$

Tuesday

1. A house is valued at £250,000. If it appreciates at a rate of 1.3% p.a. how much will it be worth after 9 years.
2. A factory produces 7,420 tonnes of CO_2 emissions. If it reduces it's emissions by 14.7% per annum after how many years will it be till it's emissions have halved?
3. Solve the following quadratic equations by factorising:
 - a. $3x^2 + 6x = 0$
 - b. $4x^2 - 1 = 0$
 - c. $x^2 + 8x + 16 = 0$
 - d. $3x^2 - 2x = 16$

Thursday

1. A house is valued at £1,750,000. If it appreciates at a rate of 0.9% p.a. how much will it be worth after 20 years.
2. A factory produces 3780 tonnes of CO_2 emissions. If it reduces it's emissions by 20.2% per annum after how many years will it be till it's emissions have halved?
3. Solve the following quadratic equations by factorising:
 - a. $x^2 + 3x = 10$
 - b. $x^2 = 4x + 21$
 - c. $4x^2 - 7x = 2$
 - d. $2x^2 = 8$

Extension

1. A house is valued at £261,375. If it appreciates at a rate of 0.15% p.a. how much will it be worth after 6 years.
2. A factory produces 10,890 tonnes of CO_2 emissions. If it reduces it's emissions by 18.6% per annum after how many years will it be till it's emissions have halved?
3. Solve the following quadratic equations by factorising:
 - a. $5x^2 - 20x = 0$
 - b. $100 - 36x^2 = 0$
 - c. $x^2 = 2x + 3$
 - d. $3x^2 = 6$

Monday

1. Expand the brackets and simplify

- $(p + 4)(p^2 + 3p + 6)$
- $5(2x + 3)(x + 9)$
- $4h + (3h + 7)(h + 6)$
- $(2w - 9)(3w^2 - 4w + 6)$

2. The data below shows the heights (in cm) of pupils in a class.

132 121 134 128 140 119 134 131
130 126 152 136 137 134 134 127

- Find the 5 figure summary
- Hence find the semi-interquartile range.

Tuesday

1. Expand the brackets and simplify

- $(2p + 1)(p^2 + 5p + 1)$
- $3(3x + 1)(x + 3)$
- $6h + (3h + 2)(h + 1)$
- $(4w - 3)(3w^2 - 2w + 2)$

2. The data below shows the heights (in cm) of pupils in a class.

117 114 117 126 108 121 103 115
126 105 113 109 122 130 116 132

- Find the 5 figure summary
- Hence find the semi-interquartile range.

Thursday

1. Expand the brackets and simplify

- $(p + 5)(2p^2 + p + 2)$
- $6(2x + 4)(5x + 1)$
- $3h + (2h + 5)(7h + 1)$
- $(3w - 5)(2w^2 - 4w + 3)$

2. The data below shows the heights (in cm) of pupils in a class.

956 93 75 81 86 94 77 68
95 67 101 88 76 94 93 100 87

- Find the 5 figure summary
- Hence find the semi-interquartile range.

Weekend/Extension

1. Expand the brackets and simplify

- $(3p - 4)(p^2 + p + 15)$
- $6(x + 7)(x - 5)$
- $6h^2 + (7h + 1)(5h + 2)$
- $(3w - 5)(3w^2 - 3w + 7)$

2. The data below shows the heights (in cm) of pupils in a class.

154 163 132 144 156 148 166 155
155 138 145 168 174 160 153 149

- Find the 5 figure summary
- Hence find the semi-interquartile range.

Monday

- Expand the brackets and simplify
 - $4 - 3(g - 6)(g + 8)$
 - $(3r - 9)(r + 7) - (r + 1)$
- The data below represents the boot sizes of trekkers on an African expedition.
9 10 10 9 11 8 9 10 10 10 11
 - Find the 5 figure summary and SIQR.
Trekksers on a hike in Europe had a median boot size of 8.5 and a SIQR of 3.5.
 - Make two statements comparing the trekkers.
- Find the roots of the following functions:
 - $y = 2x^2 + 4x$
 - $y = 9x^2 - 36$

Tuesday

- Expand the brackets and simplify
 - $6 - 2(g - 6)(2g + 1)$
 - $(3r - 4)(2r + 3) - (2r + 3)$
- The data below represents the boot sizes of trekkers on an African expedition.
7 5 4 7 10 6 11 8 9 10 5
 - Find the 5 figure summary and SIQR.
Trekksers on a hike in Europe had a median boot size of 10.5 and a SIQR of 3
 - Make two statements comparing the trekkers.
- Find the roots of the following functions:
 - $y = x^2 - 5x + 4$
 - $y = 2x^2 - x - 21$

Thursday

- Expand the brackets and simplify
 - $8 - 5(g - 6)(g + 7)$
 - $(2r - 5)(2r + 7) - (7r + 1)$
- The data below represents the boot sizes of trekkers on an African expedition.
3 5 6 10 8 7 9 10 8 4
 - Find the 5 figure summary and SIQR.
Trekksers on a hike in Europe had a median boot size of 4.5 and a SIQR of 7.5
 - Make two statements comparing the trekkers.
- Find the roots of the following functions:
 - $y = 7x^2 - 28$
 - $y = 3x^2 - 19x + 6$

Weekend/Extension

- Expand the brackets and simplify
 - $9 - 9(g - 1)(2g + 5)$
 - $(7r - 3)(5r + 2) - (9r + 15)$
- The data below represents the boot sizes of trekkers on an African expedition.
12 10 9 11 15 6 10 9 12 10 5 11
 - Find the 5 figure summary and SIQR.
Trekksers on a hike in Europe had a median boot size of 8 and a SIQR of 0.5
 - Make two statements comparing the trekkers.
- Find the roots of the following functions:
 - $y = 6x^2 + 6$
 - $y = 35 + 2x - x^2$

Monday

1. Factorise fully

- | | |
|--------------------|--------------------|
| a. $t^2 - 81$ | b. $48k^2 - 27p^2$ |
| c. $b^2 - 5b + 4$ | d. $y^2 + 3y - 4$ |
| e. $2q^2 + 6q + 4$ | f. $2y^2 - 9y - 5$ |

2. Factorise fully

- a. $y^2 - 100$
 b. $e^2 - 8e + 15$
 c. $5d^2 + 8d + 3$

3. Sketch the following lines, showing clearly where each crosses both the x- and y-axes

- a. $y = 6x + 7$
 b. $2y = 8x - 6$

Tuesday

1. Factorise fully

- | | |
|--------------------|-------------------|
| a. $t^2 - 36$ | b. $4k^2 - 36p^2$ |
| c. $b^2 - 7b + 6$ | d. $y^2 + 4y - 5$ |
| e. $2q^2 + 8q + 6$ | f. $y^2 - y - 6$ |

2. Factorise fully

- a. $y^2 - 49$
 b. $e^2 - 9e + 18$
 c. $3d^2 - 25d - 18$

3. Sketch the following lines, showing clearly where each crosses both the x- and y-axes

- a. $y = 3x + 4$
 b. $2y = 6x - 2$

Thursday

1. Factorise fully

- | | |
|---------------------|--------------------|
| a. $t^2 - 100$ | b. $9k^2 - 81p^2$ |
| c. $b^2 - 12b + 11$ | d. $y^2 + 9y - 10$ |
| e. $2q^2 + 10q + 8$ | f. $y^2 - y - 12$ |

2. Factorise fully

- a. $5y^2 - 45$
 b. $e^2 - 11e + 24$
 c. $30d^2 - d - 1$

3. Sketch the following lines, showing clearly where each crosses both the x- and y-axes

- a. $y = -2x + 4$
 b. $2y = 7x - 10$

Extension

1. Factorise fully

- | | |
|----------------------|----------------------|
| a. $t^2 - 225$ | b. $10k^2 - 100p^2$ |
| c. $b^2 - 15b + 14$ | d. $y^2 + 21y - 22$ |
| e. $2q^2 + 18q + 16$ | f. $4y^2 - 18y - 10$ |

2. Factorise fully

- a. $y^2 - 625$
 b. $e^2 - 47e + 90$
 c. $4d^2 - 11d - 3$

3. Sketch the following lines, showing clearly where each crosses both the x- and y-axes

- a. $y = -3x - 5$
 b. $3y = 11x + 2$

Monday

- Factorise fully

b. $t^2 - 81$	b. $48k^2 - 27p^2$
c. $b^2 - 5b + 4$	d. $y^2 + 3y - 4$
e. $2q^2 + 6q + 4$	f. $2y^2 - 9y - 5$
- Factorise fully
 - $y^2 - 100$
 - $e^2 - 8e + 15$
 - $5d^2 + 8d + 3$
- A parabola is given by the equation $y = x^2 - 6x + 5$
 - Write in the form $y = (x - a)^2 + b$
 - Hence, state the coordinate of the turning point and its nature.
 - Write down the equation of the axis of symmetry

Tuesday

- Factorise fully

b. $t^2 - 36$	b. $4k^2 - 36p^2$
c. $b^2 - 7b + 6$	d. $y^2 + 4y - 5$
e. $2q^2 + 8q + 6$	f. $y^2 - y - 6$
- Factorise fully
 - $y^2 - 49$
 - $e^2 - 9e + 18$
 - $3d^2 - 25d - 18$
- A parabola is given by the equation $y = x^2 + 2x + 10$
 - Write in the form $y = (x - a)^2 + b$
 - Hence, state the coordinate of the turning point and its nature.
 - Write down the equation of the axis of symmetry

Thursday

- Factorise fully

b. $t^2 - 100$	b. $9k^2 - 81p^2$
c. $b^2 - 12b + 11$	d. $y^2 + 9y - 10$
e. $2q^2 + 10q + 8$	f. $y^2 - y - 12$
- Factorise fully
 - $5y^2 - 45$
 - $e^2 - 11e + 24$
 - $30d^2 - d - 1$
- A parabola is given by the equation $y = x^2 - 3x - 5$
 - Write in the form $y = (x - a)^2 + b$
 - Hence, state the coordinate of the turning point and its nature.
 - Write down the equation of the axis of symmetry

Weekend/Extension

- Factorise fully

b. $t^2 - 225$	b. $10k^2 - 100p^2$
c. $b^2 - 15b + 14$	d. $y^2 + 21y - 22$
e. $2q^2 + 18q + 16$	f. $4y^2 - 18y - 10$
- Factorise fully
 - $y^2 - 625$
 - $e^2 - 47e + 90$
 - $4d^2 - 11d - 3$
- A parabola is given by the equation $y = x^2 - x - 10$
 - Write in the form $y = (x - a)^2 + b$
 - Hence, state the coordinate of the turning point and its nature.
 - Write down the equation of the axis of symmetry

Monday

1. A house is valued at £135,000. If it appreciates at a rate of 2.8% p.a. how much will it be worth after 7 years.
2. After a pay rise, Iona's salary increased from £24,510 to £27,109.
Express the increase as a percentage of her original salary.
3. A factory produces 4,780 tonnes of CO_2 emissions. If it reduces its emissions by 11.3% per annum after how many years will it be till its emissions have halved?
4. By using the discriminant, determine the nature of the roots:
 - a. $y = 2x^2 + 6x + 1$
 - b. $y = 3x^2 + x + 2$

Tuesday

3. A house is valued at £250,000. If it appreciates at a rate of 1.3% p.a. how much will it be worth after 9 years.
4. After a pay rise, Louise's salary increased from £18,500 to £22,350.
Express the increase as a percentage of her original salary.
5. A factory produces 7,420 tonnes of CO_2 emissions. If it reduces its emissions by 14.7% per annum after how many years will it be till its emissions have halved?
6. By using the discriminant, determine the nature of the roots:
 - a. $y = x^2 - 12x + 36$
 - b. $y = 2x^2 - 2x + 5$

Thursday

1. A house is valued at £1,750,000. If it appreciates at a rate of 0.9% p.a. how much will it be worth after 20 years.
2. After a pay rise, George's salary increased from £6,118 to £7,305.
Express the increase as a percentage of his original salary.
3. A factory produces 3780 tonnes of CO_2 emissions. If it reduces its emissions by 20.2% per annum after how many years will it be till its emissions have halved?
4. By using the discriminant, determine the nature of the roots:
 - c. $y = x^2 - 13x + 45$
 - d. $y = 4x^2 - 4x + 1$

Extension

4. A house is valued at £261,375. If it appreciates at a rate of 0.15% p.a. how much will it be worth after 6 years.
5. After a change in job, Martin's salary decreased £31,500 to £30,657.
Express the decrease as a percentage of her original salary.
6. A factory produces 10,890 tonnes of CO_2 emissions. If it reduces its emissions by 18.6% per annum after how many years will it be till its emissions have halved?
7. By using the discriminant, determine the nature of the roots:
 - a. $y = 2x^2 - 3x + 9$
 - b. $y = 9x^2 - 18x + 9$

Monday

1. Simplify

a. $c^2 \times c^{-5}$

b. $3h^2 \times 3h^{-5}$

c. $p^7 \div p^{-3}$

d. $\frac{3m \times 4m^2}{6m}$

e. $\frac{4g^2 \times -6g^3}{3g^{-2}}$

2. Solve the following, giving your answer correct to 1 decimal place.

a. $x^2 + 4x + 1 = 0$

b. $2x^2 + x - 4 = 0$

Tuesday

1. Simplify

a. $c^4 \times c^{-6}$

b. $6h^3 \times 3h^{-2}$

c. $2p^3 \div p^{-5}$

d. $\frac{4m^5 \times 4m^3}{2m}$

e. $\frac{6g^5 \times 3g}{2g^{-4}}$

2. Solve the following, giving your answer correct to 1 decimal place.

a. $x^2 + 6x + 4 = 0$

b. $2x^2 - 3x - 4 = 0$

Thursday

1. Simplify

a. $c^6 \times c^{-9}$

b. $5h^3 \times 3h^{-7}$

c. $8p^4 \div p^{-1}$

d. $\frac{5m^2 \times 4m^6}{10m^4}$

e. $\frac{3g^6 \times 8g^{-4}}{6g^3}$

2. Solve the following, giving your answer correct to 1 decimal place.

a. $x^2 + 7x + 5 = 0$

b. $2x^2 + 12x + 9 = 0$

Extension

1. Simplify

a. $2c^3 \times c^{-2}$

b. $h^7 \times 5h^{-2}$

c. $8p^7 \div 2p^{-2}$

d. $\frac{8m^2 \times 2m^3}{4m^3}$

e. $\frac{3g^4 \times 8g^{-2}}{12g^{-2}}$

2. Solve the following, giving your answer correct to 1 decimal place.

a. $x^2 - 4x - 7 = 0$

b. $2x^2 - 8x + 5 = 0$

Monday

1. Find the coordinates of the points where the following graphs cut the x-axis.

a. $y = x^2 - 9x + 20$

b. $y = x^2 - 12x + 27$

c. $y = 9x^2 - 16$

2. Write with positive indices

a. h^{-5}

b. j^{-2}

c. $5w^{-4}$

3. Evaluate

a. 2^3

b. 3^{-3}

c. $25^{\frac{1}{2}}$

d. 4^{-3}

e. $8^{\frac{2}{3}}$

Tuesday

2. Find the coordinates of the points where the following graphs cut the x-axis.

a. $y = x^2 - 6x + 5$

b. $y = x^2 - 8x + 15$

c. $y = 28 - 63x^2$

3. Write with positive indices

a. h^{-8}

b. j^{-9}

c. $7w^{-3}$

4. Evaluate

a. 3^4

b. 2^{-3}

c. $81^{\frac{1}{2}}$

d. 6^{-2}

e. $64^{\frac{2}{3}}$

Thursday

1. Find the coordinates of the points where the following graphs cut the x-axis.

a. $y = x^2 + 14x + 40$

b. $y = x^2 - 6x - 72$

c. $y = 25 - 4x^2$

2. Write with positive indices

a. $3h^{-3}$

b. $2j^{-6}$

c. $7w^{-8}$

3. Evaluate

a. 2^6

b. 8^{-2}

c. $121^{\frac{1}{2}}$

d. 4^{-3}

e. $16^{\frac{3}{4}}$

Extension

1. Find the coordinates of the points where the following graphs cut the x-axis.

a. $y = x^2 + x - 56$

b. $y = x^2 + 5x - 36$

c. $y = 3x - 9x^2$

2. Write with positive indices

a. $8h^{-6}$

b. j^{-9}

c. $11w^{-3}$

3. Evaluate

a. 2^8

b. 3^{-4}

c. $100^{\frac{1}{2}}$

d. 4^{-2}

e. $125^{\frac{2}{3}}$

Monday

1. Simplify

- $\sqrt{5} + \sqrt{45}$
- $3\sqrt{7} - \sqrt{28}$
- $\sqrt{20} + 4\sqrt{5} + \sqrt{125}$
- $\sqrt{72} - \sqrt{200}$
- $\frac{\sqrt{12}}{\sqrt{3}}$

2. Find the coordinates of the point of intersection of

- $2y + 3x = -2$ and $3y + 5x = 1$
- $4x + y = 17$ and $3x + 4y = 3$
- $6x - 2y - 1 = 0$ and $x = -1$

4. Find the magnitude of each vector below.

$$\mathbf{g} = \begin{pmatrix} 5 \\ 3 \\ 4 \end{pmatrix}$$

$$\mathbf{r} = \begin{pmatrix} 6 \\ -2 \\ -3 \end{pmatrix}$$

Tuesday

1. Simplify

- $\sqrt{125}$
- $2\sqrt{6} - \sqrt{24}$
- $\sqrt{32} + 3\sqrt{2} - \sqrt{8}$
- $\sqrt{27} - \sqrt{192}$
- $\frac{\sqrt{18}}{\sqrt{50}}$

2. Find the coordinates of the point of intersection of

- $2x - 4y = 4$ and $3x - 5y = 4$
- $2x + 5y = 5$ and $3x + 3y = 12$
- $2x - 2y - 9 = 0$ and $x = -2$

3. Find the magnitude of each vector below.

$$\mathbf{g} = \begin{pmatrix} 1 \\ 2 \\ -2 \end{pmatrix}$$

$$\mathbf{r} = \begin{pmatrix} 2 \\ -2 \\ -4 \end{pmatrix}$$

Thursday

1. Simplify

- $\sqrt{108}$
- $2\sqrt{3} - \sqrt{75}$
- $\sqrt{600} + 3\sqrt{6} - \sqrt{24}$
- $\sqrt{48} - \sqrt{192}$
- $\frac{\sqrt{63}}{\sqrt{112}}$

2. Find the coordinates of the point of intersection of

- $4x + 5y = 27$ and $2x + 3y = 15$
- $3x + 3y = 45$ and $4x - 3y = 4$
- $7x - 3y - 8 = 0$ and $x = -5$

3. Find the magnitude of each vector below.

$$\mathbf{g} = \begin{pmatrix} 2 \\ 3 \\ 4 \end{pmatrix}$$

$$\mathbf{r} = \begin{pmatrix} -2 \\ -1 \\ -4 \end{pmatrix}$$

Extension

1. Simplify

- $\sqrt{245}$
- $\sqrt{216}$
- $\sqrt{3} + \sqrt{27}$
- $8\sqrt{13} - \sqrt{117}$
- $\sqrt{363} + 3\sqrt{12} - \sqrt{192}$
- $\frac{\sqrt{8}}{\sqrt{72}}$

2. Find the coordinates of the point of intersection of

- $4x - 2y = 6$ and $5x + 4y = 27$
- $9x - 3y - 8 = 0$ and $x = -3$

3. Find the magnitude of each vector below.

$$\mathbf{g} = \begin{pmatrix} 2 \\ 2 \\ 1 \end{pmatrix}$$

$$\mathbf{r} = \begin{pmatrix} 3 \\ 0 \\ -4 \end{pmatrix}$$

Monday

1. Find the coordinates of the point of intersection between the lines

a. $x - 2y = 1$ and $x + y = 10$

b. $x + 4y = 9$ and $2x - 2y = 3$

2. Rationalise the denominator

a. $\frac{3}{\sqrt{7}}$ b. $\frac{11}{\sqrt{11}}$ c. $\frac{13}{2\sqrt{5}}$

3. Sketch the waves below for $0 < x < 360$

a. $y = 2\sin x$

b. $y = \cos 4x$

Tuesday

1. Find the coordinates of the point of intersection between the lines

a. $3x + 4y = 3$ and $x - 8y = 1$

b. $5x - 6y = 12$ and $2x - 6y = 3$

2. Rationalise the denominator

a. $\frac{5}{\sqrt{3}}$ b. $\frac{7}{\sqrt{7}}$ c. $\frac{5}{4\sqrt{3}}$

3. Sketch the waves below for $0 < x < 360$

a. $y = -\sin 3x$

b. $y = 3\cos 2x$

Thursday

1. Find the coordinates of the point of intersection between the lines

a. $3x + 5y = 7$ and $3x - 2y = 14$

b. $3x + 2y = 2$ and $2x + 3y = -2$

2. Rationalise the denominator

a. $\frac{6}{\sqrt{6}}$ b. $\frac{7}{\sqrt{5}}$ c. $\frac{12}{5\sqrt{11}}$

3. Sketch the waves below for $0 < x < 360$

a. $y = 2\sin(x + 30)$

b. $y = 3\cos(x - 60)$

Extension

1. Find the coordinates of the point of intersection between the lines

a. $15x + 2y = 4$ and $2x + y = 2$

b. $2x + y = 3$ and $y = 5 - 4x$

2. Rationalise the denominator

a. $\frac{4}{\sqrt{8}}$ b. $\frac{11}{\sqrt{2}}$ c. $\frac{13}{8\sqrt{12}}$

3. Sketch the waves below for $0 < x < 360$

a. $y = \tan x$

b. $y = 2\cos 2x + 1$

Monday

1. Simplify

a. $\frac{x^2 - 25}{x + 5}$

b. $\frac{x - 4}{x^2 - 16}$

2. Express as a single fraction in its simplest form

b. $\frac{7}{x} + \frac{2}{y}$

b. $\frac{5}{g} + \frac{5}{g+2}$

c. $\frac{7}{x-2} - \frac{3}{x-1}$

d. $\frac{ab^2}{2} \times \frac{8}{a^2b}$

3. Solve the following for $0 < x < 360$

a. $2 \cos x = 1$

b. $4 \sin x - 2 = 0$

Tuesday

7. Simplify

a. $\frac{x-7}{x^2-49}$

b. $\frac{3x+12}{x^2+x-12}$

8. Express as a single fraction in its simplest form

a. $\frac{9}{g} - \frac{3}{k}$

b. $\frac{5}{y+3} + \frac{4}{y+2}$

c. $\frac{2}{x-4} - \frac{3}{x-1}$

d. $\frac{6jk}{5} \div \frac{12j}{25}$

9. Solve the following for $0 < x < 360$

d. $7 \tan x = 9$

e. $4 + 3 \cos x = 2$

Thursday

4. Simplify

a. $\frac{25x^2 - 9}{5x - 3}$

b. $\frac{5x - 15}{x^2 - 6x + 9}$

5. Express as a single fraction in its simplest form

c. $\frac{9}{y^2} + \frac{4}{y^3}$

b. $\frac{3}{x} + \frac{11}{x-2}$

c. $\frac{5}{y-3} - \frac{2}{y+3}$

d. $\frac{12d^2e}{7f^2} \times \frac{21f^3}{4d^4e}$

4. Solve the following for $0 < x < 360$

a. $8 \cos x + 6 = 0$

b. $20 \sin x - 2 = -16$

Extension

7. Simplify

a. $\frac{x^2 + 8x - 20}{3x + 30}$

b. $\frac{x+3}{2x^2 - 4x - 30}$

8. Express as a single fraction in its simplest form

d. $\frac{f}{g} + \frac{h}{i}$

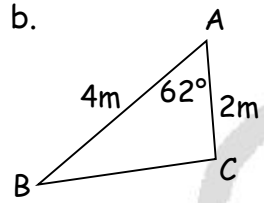
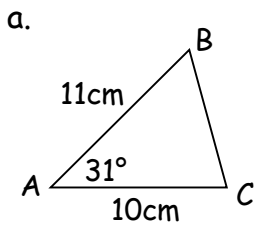
b. $\frac{7}{m} - \frac{3}{m-4}$

c. $\frac{3}{x+4} + \frac{6}{x-2}$

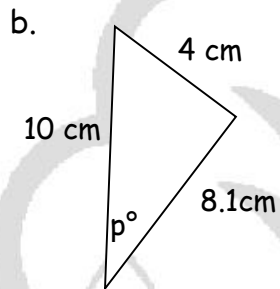
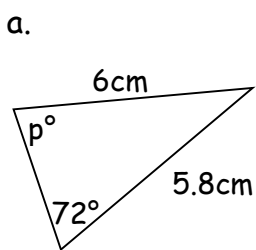
d. $\frac{10x^2}{3g^2} \div \frac{4xy}{6g}$

Monday

1. Find the triangle's area

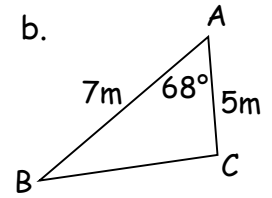
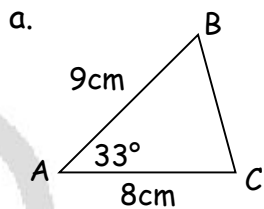


2. Find the size of angle p.

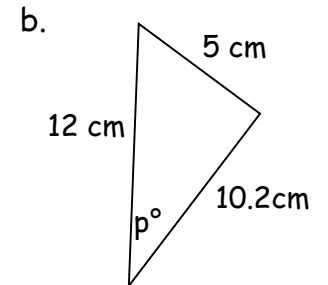
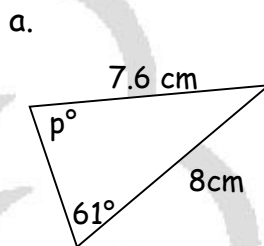


Tuesday

1. Find the triangle's area

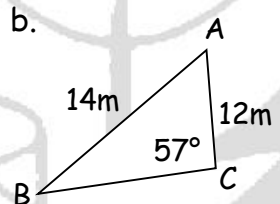
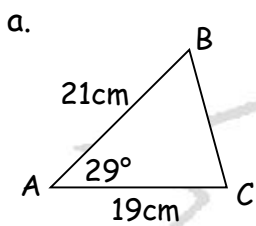


2. Find the size of angle p.

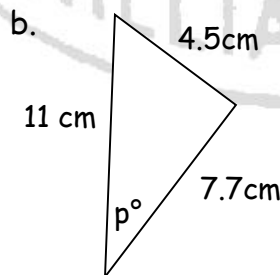
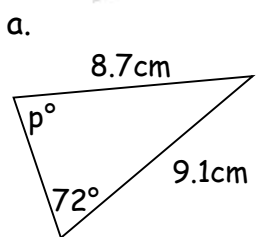


Thursday

1. Find the triangle's area

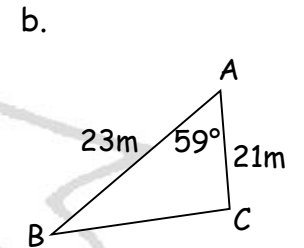
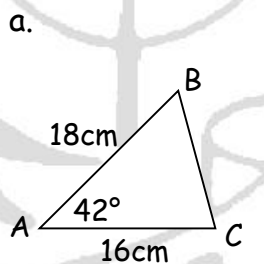


2. Find the size of angle p.

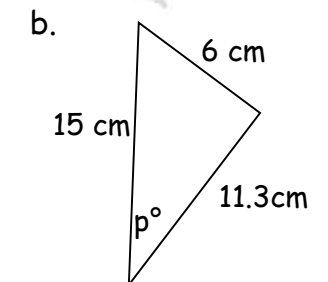
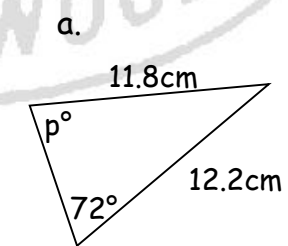


Extension

1. Find the triangle's area



2. Find the size of angle p.



Monday

1. Factorise fully

a. $x^2 - 49$

b. $y^2 - 5y - 36$

c. $2t^2 + 4t + 2$

d. $s^2 - r^2$

e. $6p^2 + 12p - 48$

f. $6y^2 + 17y - 3$

2. Factorise fully

a. $2x^2 + 5x + 3$

b. $18y^2 - 12y - 48$

Tuesday

1. Factorise fully

a. $x^2 - 121$

b. $y^2 - 3y - 54$

c. $2t^2 + 24t + 22$

d. $p^2 - q^4$

e. $5p^2 - 10p - 40$

f. $4y^2 + 12y + 9$

2. Factorise fully

a. $4x^2 + 14x + 6$

b. $6y^2 - 15y + 6$

Thursday

1. Factorise fully

a. $x^2 - 144$

b. $y^2 - 12y - 45$

c. $4t^2 + 8t + 4$

d. $4s^2 - m^2$

e. $2p^2 + 30p + 100$

f. $4y^2 + 3y - 7$

2. Factorise fully

a. $14c^2 - 56d^2$

b. $10y^2 - y - 3$

Extension

1. Factorise fully

a. $2x^2 - 98$

b. $y^2 - 4y - 21$

c. $2t^2 - 18t + 40$

d. $9p^2 - 16q^2$

e. $2p^2 + 22p + 48$

f. $-8y^2 - 2y + 3$

2. Factorise fully

a. $4i^2 + 21i - 18$

b. $4m^2 - 7mn - 2n^2$