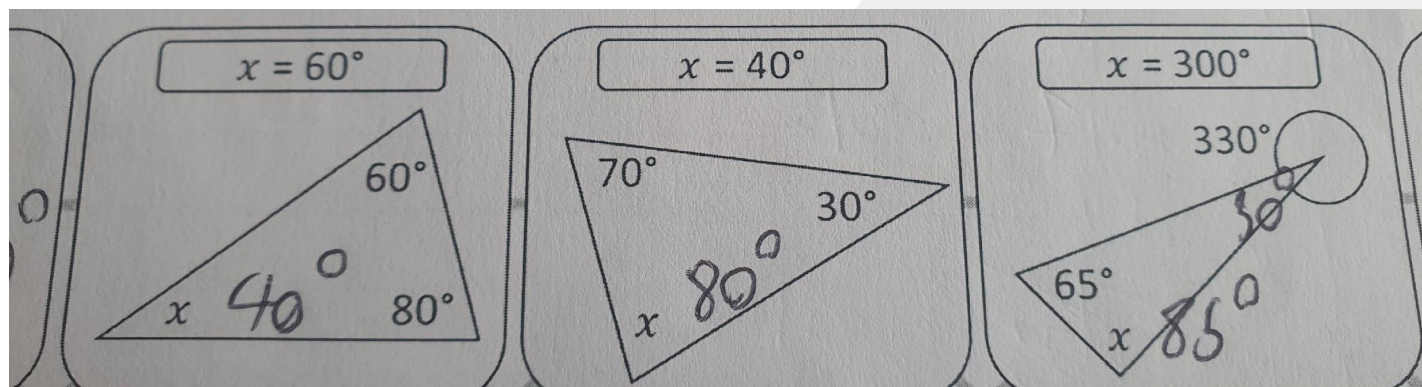


Progression in Mathematics at Hessle Academy

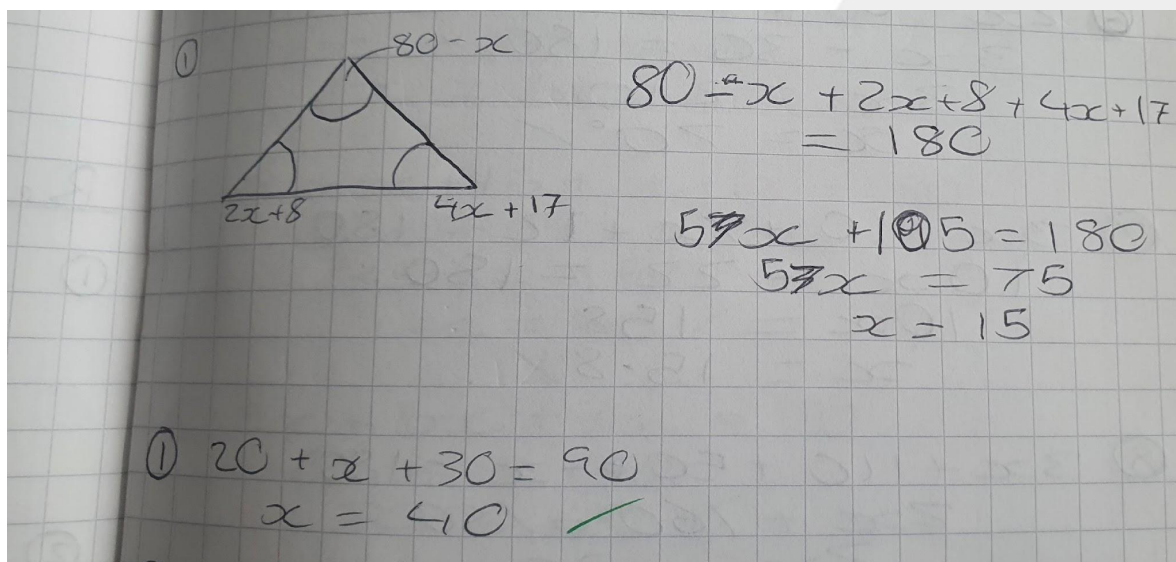
Angles



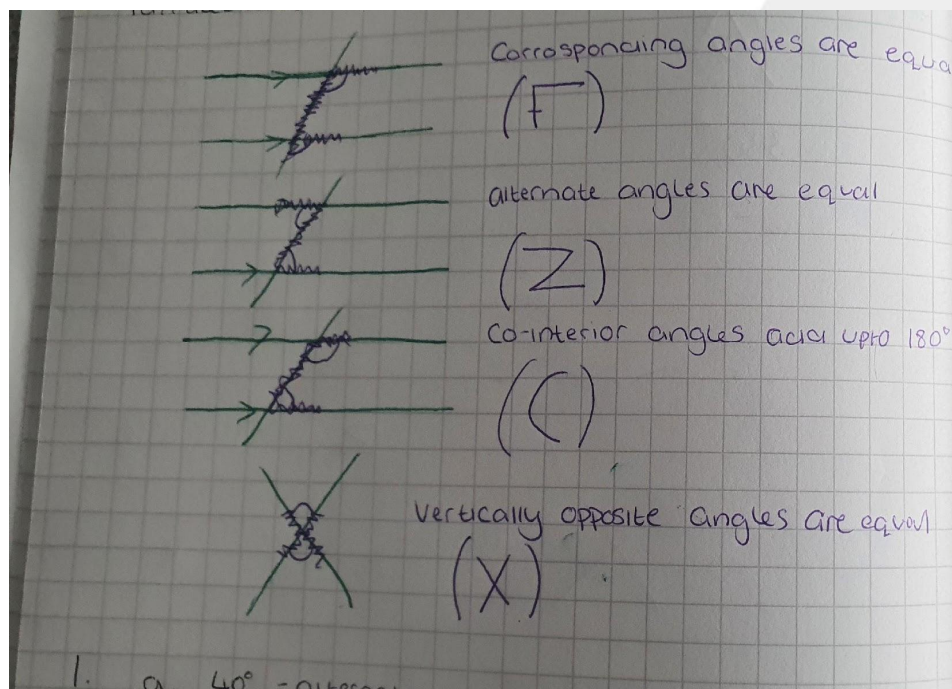
Learning Objective:
Use addition and subtraction to find missing angles in triangles, around a point and on straight lines.



Learning Objective:
Use algebra form equations to find
solutions to missing angles in shapes



Learning Objective: Use parallel line rules to calculate missing angles



Learning Objective: Calculate missing angles in Polygons where the number of sides are greater than 4

Interior + exterior

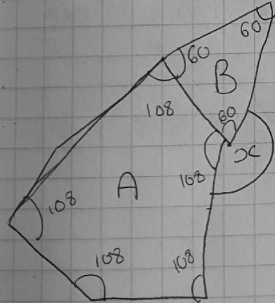
① find interior angle method 1

$$(5-2) \times 180 = 540$$
$$540 \div 5 = 108^\circ$$

method 2

$$\text{int } (n-2) \times (180)$$
$$\text{ext } 360 \div n$$
$$360 \div 5 = 72 \text{ (ext)}$$
$$180 - 72 = 108^\circ$$

②



find x

$$(n-2) \times 180$$
$$5-2 \times 180 = 540$$
$$540 \div 5 = 108$$
$$108 + 60 = 168$$
$$360 - 168 = 192^\circ$$
$$x = 192$$

Learning Objective: Use Trigonometry to calculate missing angles

Find the angle BAC

(a)

10 cm

3 cm

12.5 cm

(b)

12.5 cm

2.5 cm

13.5 cm

a) $\sqrt{10^2 + 3^2} = \sqrt{109}$
 $\tan \theta = \frac{3}{10}$
 $\tan^{-1}\left(\frac{3}{10}\right) = 15.6^\circ \text{ (1dp)}$

b) $\sqrt{12.5^2 + 2.5^2} = \sqrt{162.5}$
 $\tan \theta = \frac{2.5}{12.5}$
 $\tan^{-1}\left(\frac{2.5}{12.5}\right) = 10.5^\circ \text{ (1dp)}$

a)

area of sec. = $\frac{80}{360} \times \pi \times 7^2 = 34.208 \text{ cm}^2$
 area of triangle = $\frac{1}{2} \times 7 \times 7 \times \sin(80) = 24.128 \text{ cm}^2$
 area of seg. = 10.08 cm^2

b)

area of sec. = $\frac{80}{360} \times \pi \times 2.5^2 = 8.034 \text{ cm}^2$
 area of triangle = $\frac{1}{2} \times 5 \times 5 \times \sin(40) = 8.034 \text{ cm}^2$
 area of seg. = 9.41 cm^2

