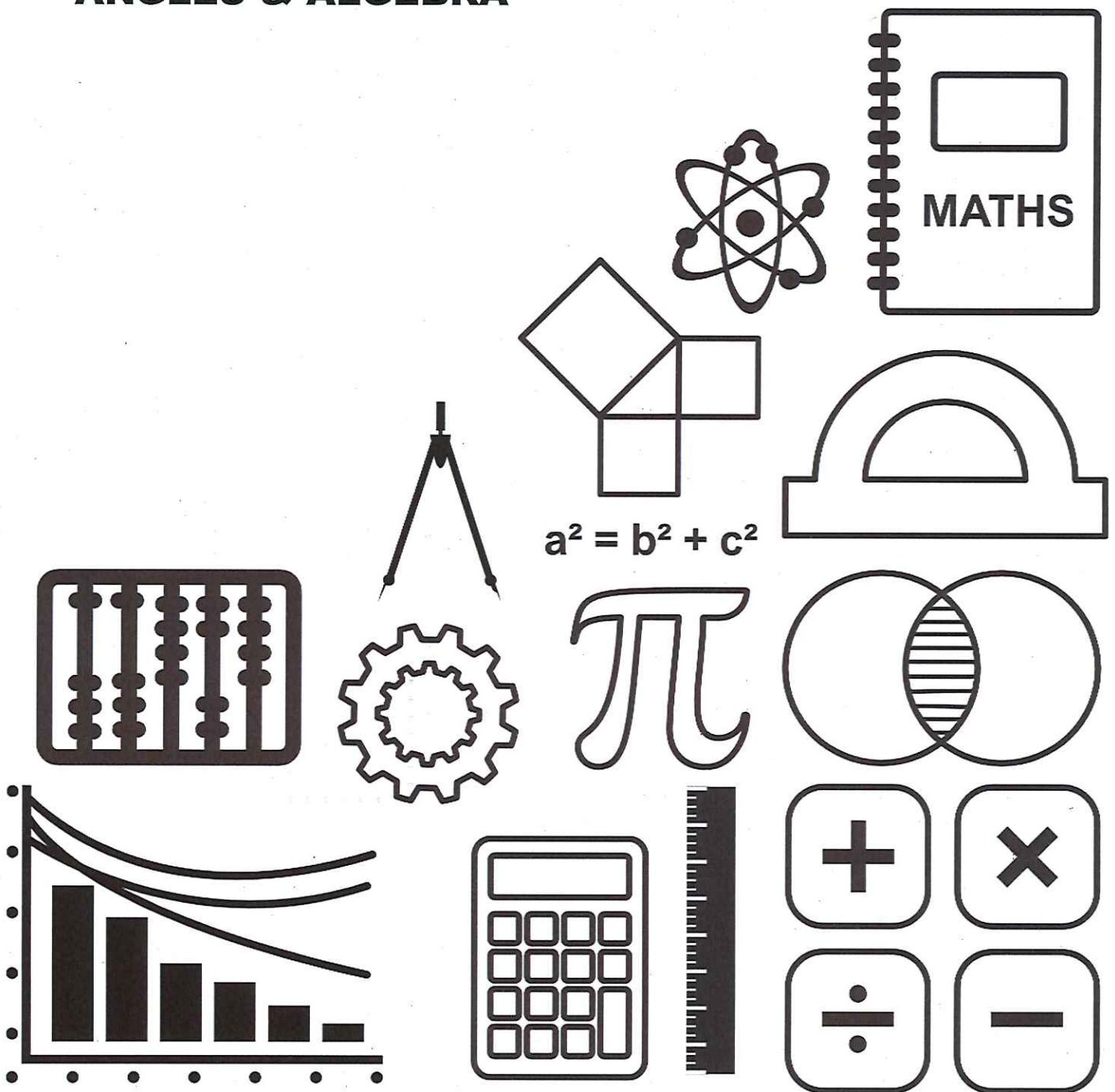


MATHSDIY

GCSE TOPIC BOOKLET ANGLES & ALGEBRA

SOLUTIONS



1. Find the size of the angle marked z .

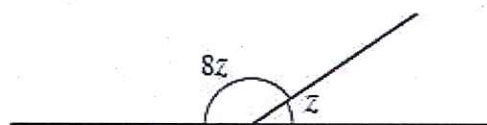


Diagram not drawn to scale.

$$9z = 180$$

$$z = 180 \div 9$$

$$z = \underline{\underline{20^\circ}}$$

[2]

- 2.

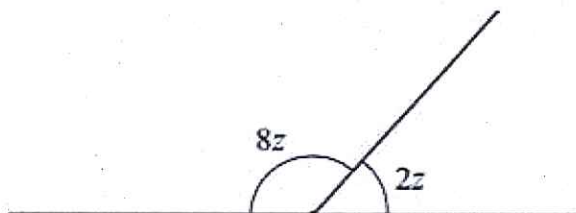


Diagram not drawn to scale.

Find the value of z .

$$10z = 180$$

$$z = 180 \div 10$$

$$z = \underline{\underline{18^\circ}}$$

[2]

3. The angles of a quadrilateral are x° , 49° , $3x^\circ$ and 111° .
Form an equation in x , and use your equation to find the value of x .

$$x + 49 + 3x + 111 = 360$$

$$4x + 160 = 360$$

$$4x = 360 - 160$$

$$4x = 200$$

$$\underline{\underline{x = 50^\circ}}$$

[4]

4.

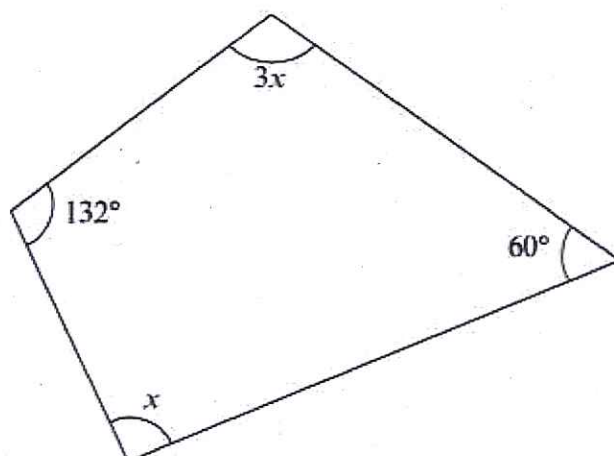


Diagram not drawn to scale

Calculate the value of x .

$$3x + 132 + 60 + x = 360$$

$$4x + 192 = 360$$

$$4x = 360 - 192$$

$$4x = 168$$

$$x = 168 \div 4$$

$$x = \underline{\underline{42^\circ}}$$

[4]

5. The diagram shows a triangle with angles, measured in degrees, of $5x$, $2x$ and $3x$.

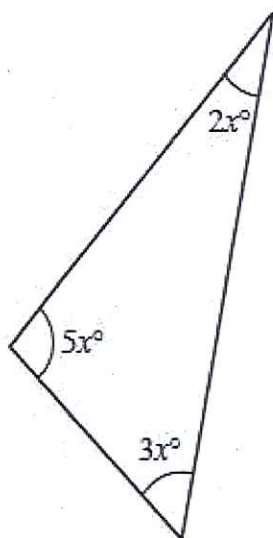


Diagram not drawn to scale.

Form an equation in x and solve it.

$$5x + 3x + 2x = 180$$

$$10x = 180$$

$$\underline{x = 18^\circ}$$

[3]

6. The diagram shows a quadrilateral with angles, measured in degrees, of $5x + 40$, $2x + 20$, $2x$ and $3x$.

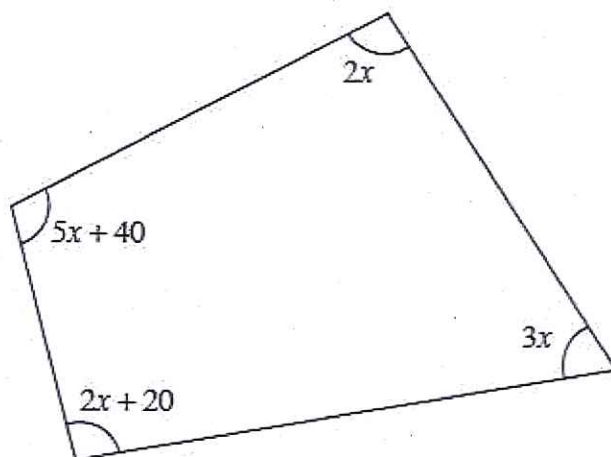


Diagram not drawn to scale.

Form an equation in x and solve it.

$$2x + 3x + 5x + 40 + 2x + 20 = 360$$

$$12x + 60 = 360$$

$$12x = 360 - 60$$

$$12x = 300$$

$$x = 300 \div 12$$

$$\underline{\underline{x = 25^\circ}}$$

[3]

7. The diagram shows four angles, measured in degrees, meeting at a point O .

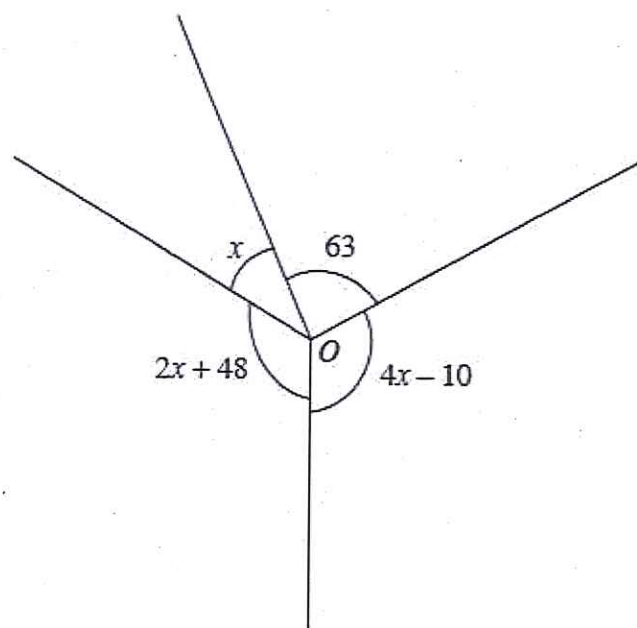


Diagram not drawn to scale.

- (a) Write down an equation that x satisfies.

$$x + 63 + 4x - 10 + 2x + 48 = 360$$

$$7x + 101 = 360$$

[2]

- (b) Solve your equation to find the value of x .

$$7x = 360 - 101$$

$$7x = 259$$

$$x = 259 \div 7$$

$$x = 37$$

[2]

8.

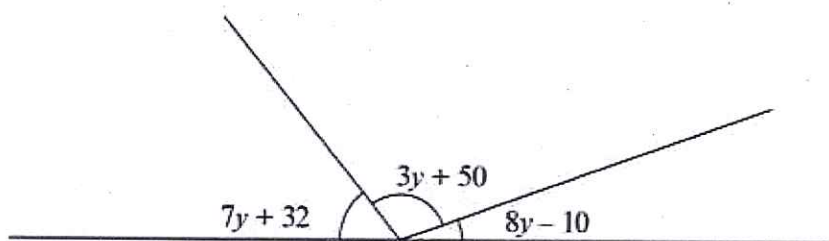


Diagram not drawn to scale

All of the angles are measured in degrees.

Find the size of each of the three angles.

$$7y + 32 + 3y + 50 + 8y - 10 = 180$$

$$18y + 72 = 180$$

$$18y = 180 - 72$$

$$18y = 108$$

$$y = 108 \div 18, \underline{y = 6^\circ}$$

$$7y + 32 = 7(6) + 32 = 74$$

$$3y + 50 = 3(6) + 50 = 68$$

$$8y - 10 = 8(6) - 10 = 38$$

$$7y + 32 = \underline{74}^\circ$$

$$3y + 50 = \underline{68}^\circ$$

$$8y - 10 = \underline{38}^\circ$$

[5]

9.

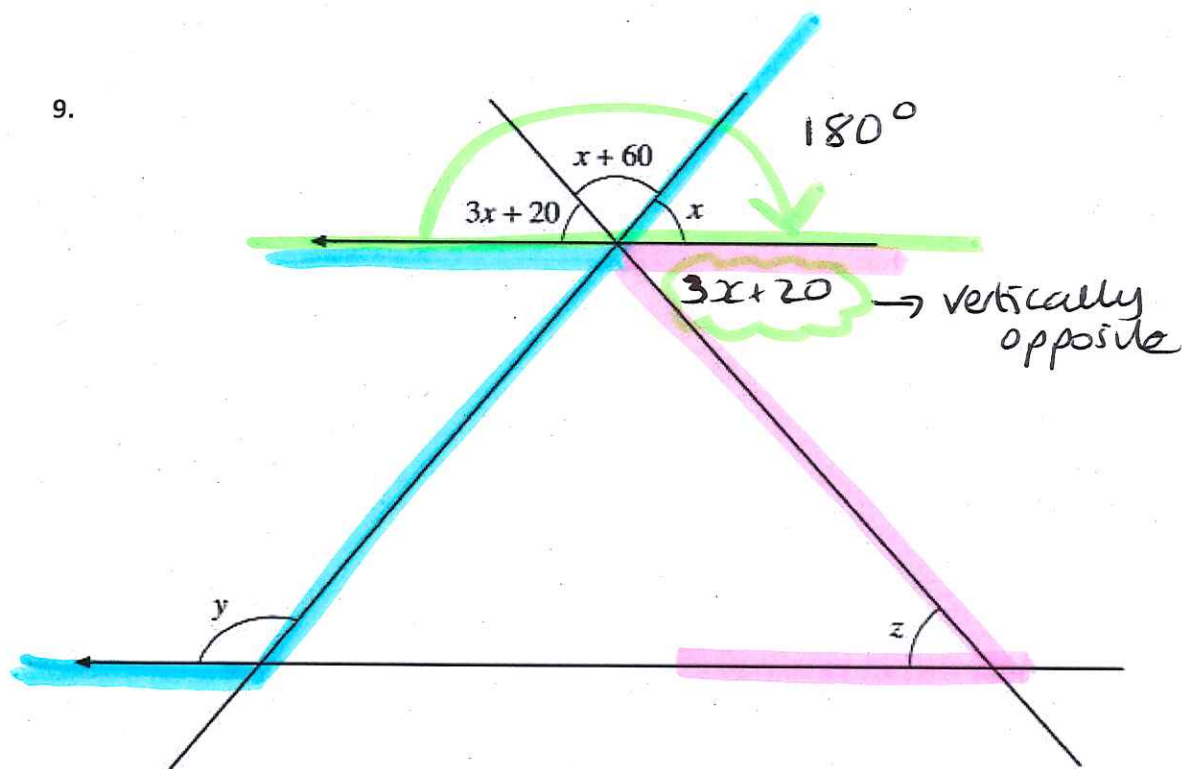


Diagram not drawn to scale.

All angles are measured in degrees.
Find the size of angles x , y and z .

$$x + x + 60 + 3x + 20 = 180 \text{ (angles on a straight line)}$$

$$5x + 80 = 180$$

$$5x = 100, \quad x = 20^\circ$$

'F angles' / corresponding gives

$$y = 3x + 20 + x + 60 = 60 + 20 + 20 + 60$$

$$y = 160^\circ$$

vertically opposite / alternate angles gives

$$z = 3x + 20 = 3(20) + 20 = 80^\circ$$

$$x = 20^\circ, \quad y = 160^\circ, \quad z = 80^\circ$$

[5]