

Walt solve angles involving triangles and polygons

Success Criteria

- I can identify different types of triangles and polygons.
- I can use the properties of triangles and polygons to find missing angles.
- I can solve problems involving angles in triangles and polygons

Important information

Triangles

- Equilateral triangle: All three angles are equal.
- Isosceles triangle: Two of the angles are equal.
- Scalene triangle: All three angles are different.

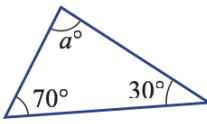
Polygon

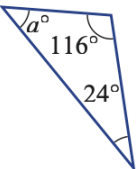
- Square: All four sides are equal and all four angles are right angles.
- Rectangle: All four sides are parallel and all four angles are right angles.
- Rhombus: All four sides are equal, but the angles are not necessarily right angles.
- Parallelogram: All opposite sides are parallel, but the angles are not necessarily right angles.
- Trapezoid: One set of parallel sides, but the other set of sides may or may not be parallel.
- Regular polygon: All sides are equal and all angles are equal.

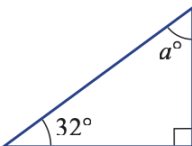
Important formula

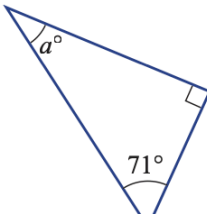
Sum of angles = $(n-2)*180$

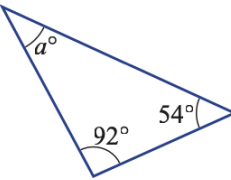
4 Use the angle sum of a triangle to help find the unknown angle in these triangles.

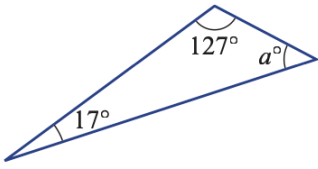
a 

b 


c 

d 

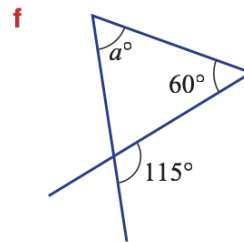
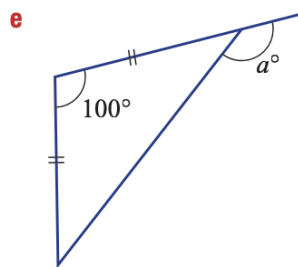
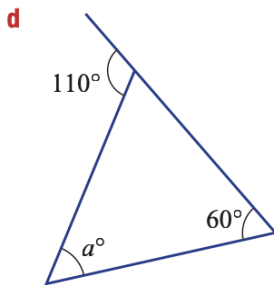
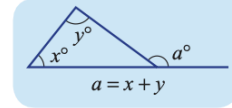
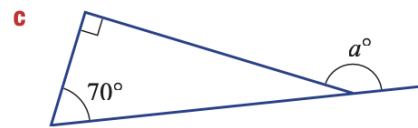
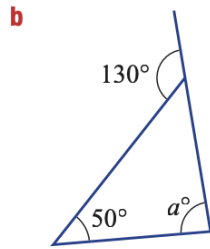
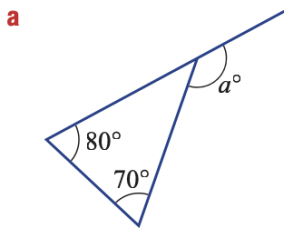
e 

f 

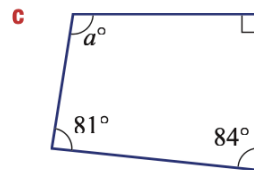
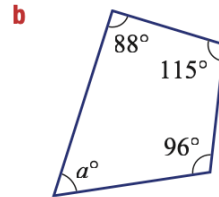
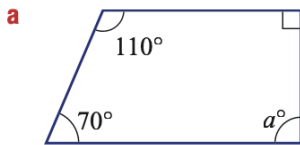
For each one start with an equation like $a + 36 + 48 = 180$. Then find the value of a .



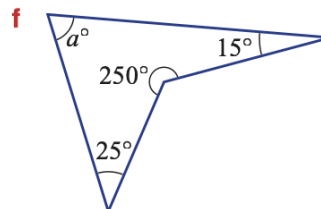
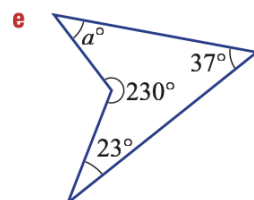
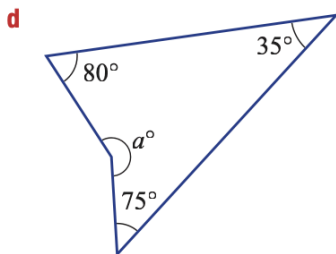
6 Find the value of a .



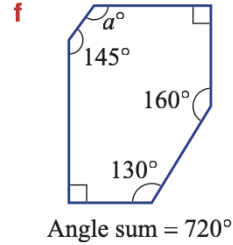
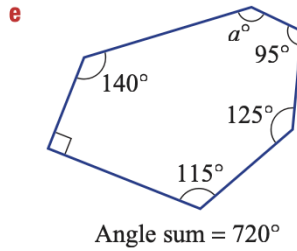
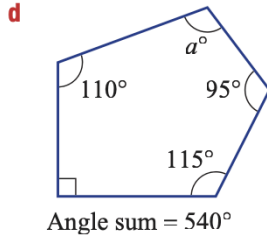
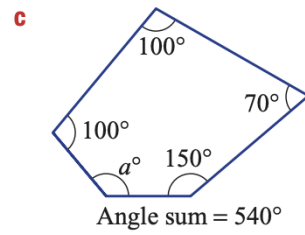
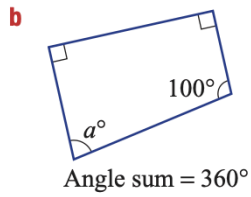
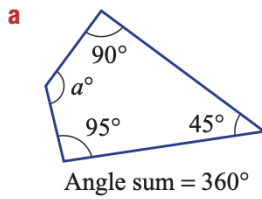
4 Use the quadrilateral angle sum to find the value of a in these quadrilaterals.



\perp is a 90° angle. The angle sum of a quadrilateral is 360° .



6 Find the value of a in these polygons, by using the given angle sum.



Write an equation using the given angle sum, then find the value of a .

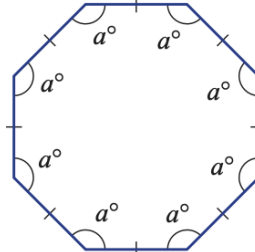
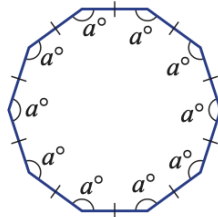
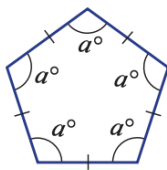


7 Regular polygons have equal interior angles. Find the size of an interior angle for these regular polygons with the given angle sum.

a Pentagon (540°)

b Decagon (1440°)

c Octagon (1080°)



First find the angle sum then divide by the number of sides.

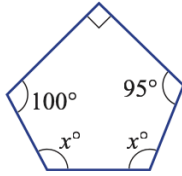


Extension

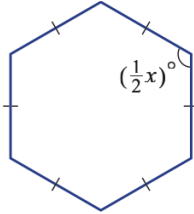
★ Angle sum challenge

13 Find the value of x in these diagrams.

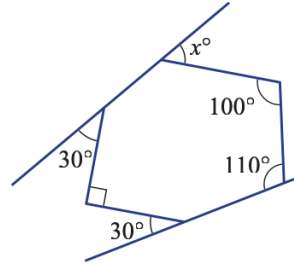
a



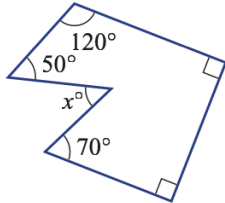
b



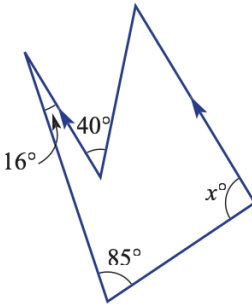
c



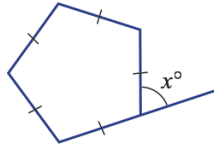
d



e



f



Answers

4 a 80

b 40

c 58

d 19

e 34

f 36

6 a 150

b 80

c 160

d 50

e 140

f 55

Polygon

4 a 90

b 61

c 105

d 170

e 70

f 70

6 a square, rhombus

b trapezium

c rectangle, parallelogram, kite

d square, rhombus, kite

e square, rectangle

7 a 152 **b** 69 **c** 145

d 74 **e** 59 **f** 30

13 a 127.5 **b** 240 **c** 60

d 60 **e** 79 **f** 72