Worksheet 22: Angle facts

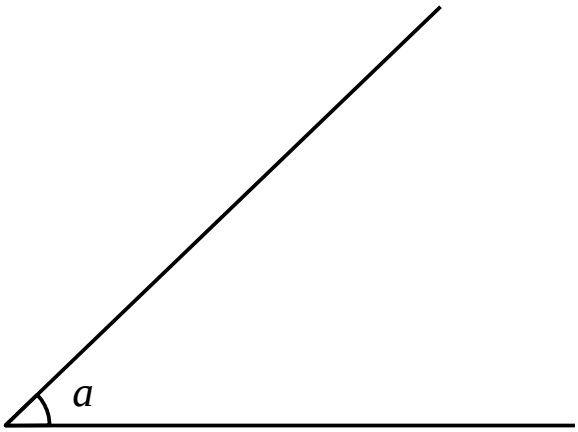
Reasoning about relationships between angles

Measuring angles

You need a protractor for this section.

Question 1

Look at angle *a* below



a) What type of angle is angle *a*?

b) Measure the size of angle *a* using a protractor

Question 2

Take a piece of paper in 'portrait' orientation and

a) Draw a line measuring 10 cm across the middle of the sheet

b) Label the left end of the line A and the right end B

c) At point A mark an angle of 60 degrees and draw a line

d) At point B mark an angle of 30 degrees and draw a line

e) Label the point where the two lines cross C

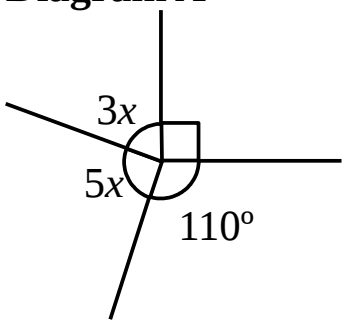
g) What shape is ABC?

f) Measure the angle ACB – can you predict what the value should be?

Basic angle facts

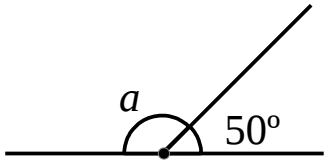
Question 1

Diagram A



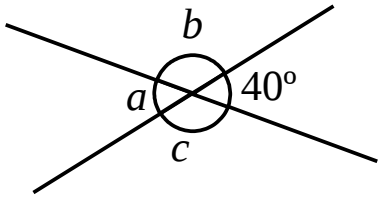
Find value of x and the values of all the angles.
State the angle fact that you use.

Diagram B



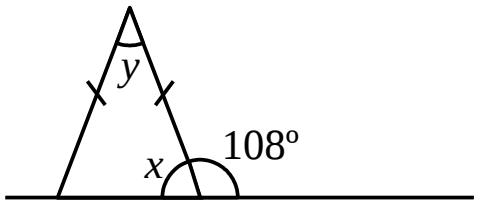
Find the value of angle a in the diagram.
State the angle fact that you use.

Diagram C



Find the values of each of the angles labelled a, b and c.
In each case, state a reason for your answer.

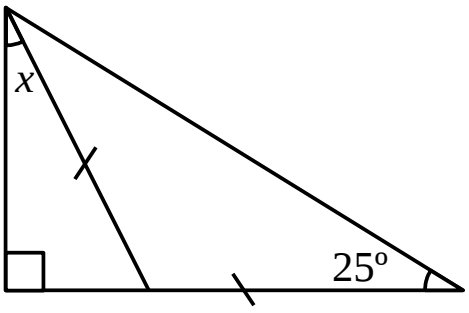
Diagram D



Calculate the size of angle x and angle y

Write out the angle facts you used for each of the angles.

Question 2

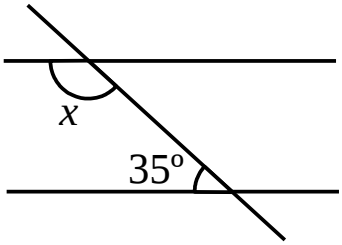


Calculate the value of angle x. Explain your reasoning step by step.

Parallel lines with a transversal line

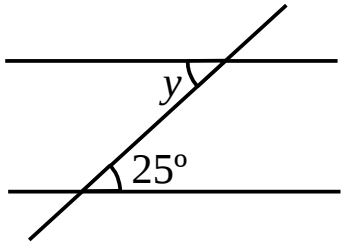
Question 1

Diagram A



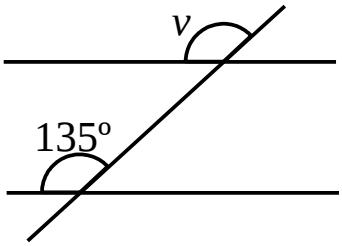
Calculate the size of angle *x*
Give a reason for your answer

Diagram B



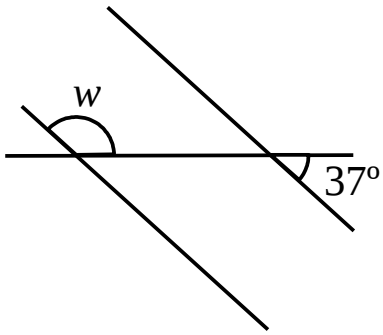
State the size of angle *y* and give a reason for your answer

Diagram C



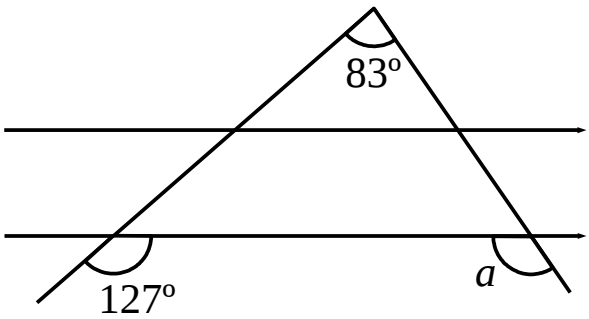
State the size of angle v and give a reason for your answer

Diagram D



Calculate the size of angle w and explain the steps you used.

Question 2

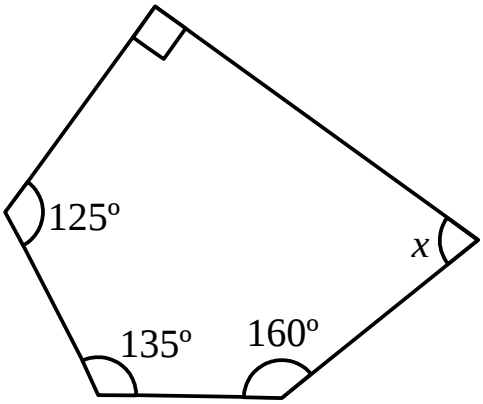


Calculate the size of angle *a*

Carefully explain your reason for each step

Polygon puzzles

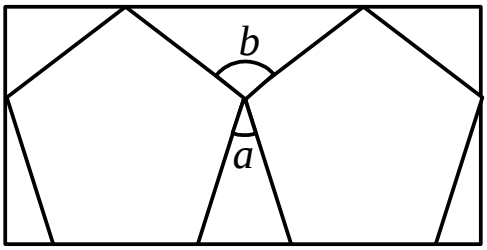
Question 1



Calculate the size of angle x

State the angle fact you made use of

Question 2

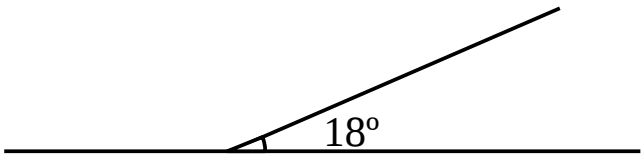


Two identical regular pentagons are placed in a rectangle as shown.

Find the size of angle a and the size of angle b

Explain the steps in your solution.

Question 3



A regular polygon has an exterior angle of 18º

How many sides does the polygon have?

Calculate the total internal angle of the polygon