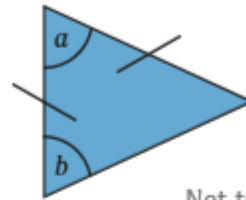
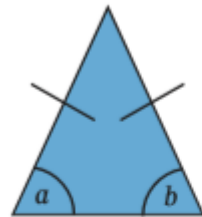




- 1) a) Circle the isosceles triangle which has the hatch marks shown correctly to mark equal length sides.

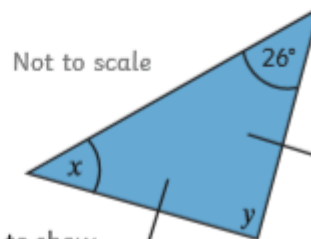


Not to scale

- b) Angle a in both triangles is 65° . What will angle b measure?
- c) Calculate the size of the final missing angle.

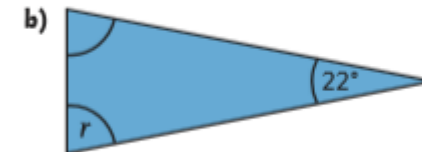
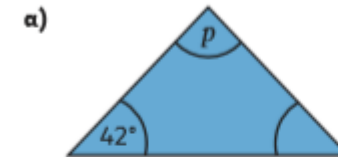
- 2) Are the statements about this isosceles triangle true or false?

- a) $y = 26^\circ$
b) $x = 26^\circ$
c) $x + y = 115^\circ$
d) The hatch marks to show equal sides are marked correctly

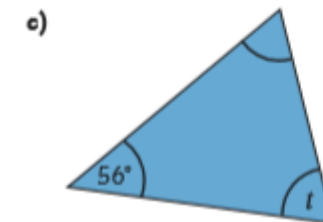


Not to scale

- 3) Mark the equal sides with hatch marks then calculate the size of the missing angles in these isosceles triangles.



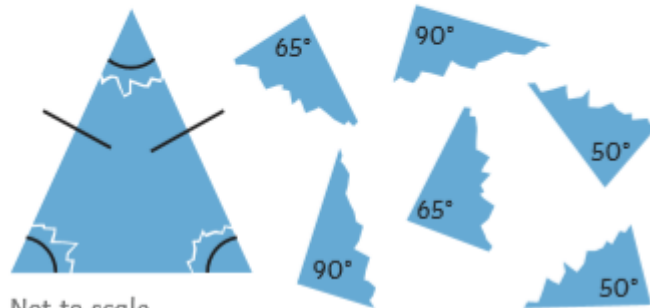
Not to scale





- 1) This isosceles triangle has had the corners cut off.

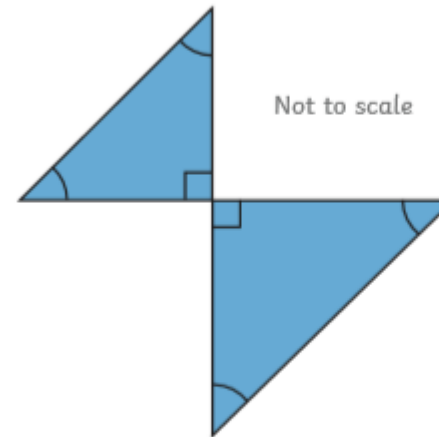
Which three corners could have come from the triangle? Which three could not? Explain your answer fully.



Not to scale



- 2) This shape is made from two right-angled isosceles triangles.

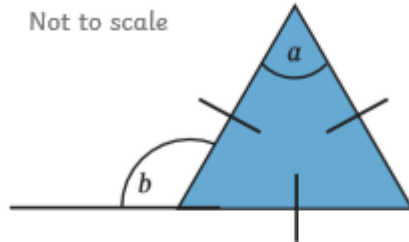


Oliver says: "I can calculate the size of each of the missing angles in this shape, even though no angle measurements are given."

Is Oliver correct? Prove it!

- 1) This is an equilateral triangle. Calculate the value of the missing angles a and b .

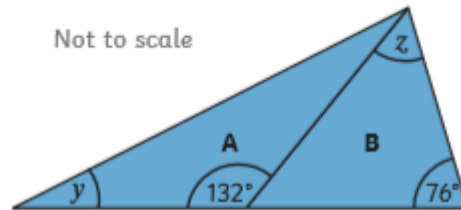
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- 2) Two triangles share a side. Triangle A is an isosceles triangle. Triangle B is a scalene triangle.

Use what you know about these triangle types to help you calculate the value of the missing angles y and z .

Not to scale



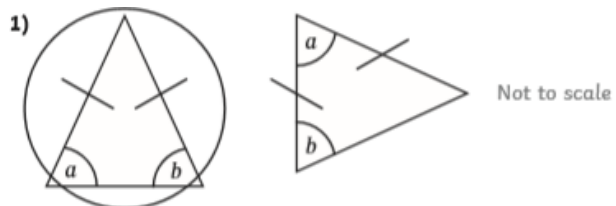
- 3) My triangle has one angle of 60° and two other unknown missing angles.

- a) How many of these different types of triangle can you make by finding different possibilities for the two unknown missing angles?

- Equilateral (all angles are equal)
- Isosceles (two angles are equal)
- Scalene (no equal angles)
- Right-angled scalene or isosceles (at least one right-angle)

- b) What if my missing angle was 50° ?

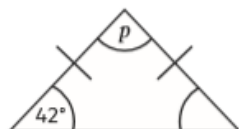
ANSWERS



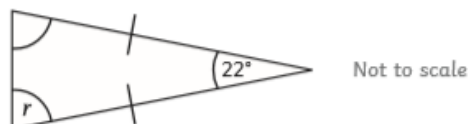
- a) The triangle on the left shows the hatch marks correctly.
- b) Angle $b = 65^\circ$
- c) Missing angle = 50° ($65^\circ + 65^\circ = 130^\circ$. $180^\circ - 130^\circ = 50^\circ$)



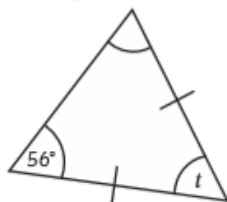
- a) $y = 26^\circ$ **False**
 - b) $x = 26^\circ$ **True**
 - c) $x + y = 115^\circ$ **False**
 - d) The hatch marks to show equal sides are marked correctly. **True**
- 3) a) angle $p = 96^\circ$



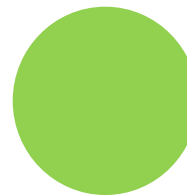
- b) angle $r = 79^\circ$



- c) angle $t = 68^\circ$



Hatch marked lines to be drawn on the sides indicated.



- 1) The three pieces that could have come from the triangle are 65° , 65° and 50°

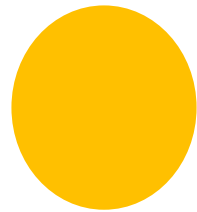
Any other combinations of three pieces could not have come from the triangle for the following reasons:

- The three pieces do not add together to make 180° .
- Two of the pieces do not have the same size angle (as this is an isosceles triangle two of the angles will be identical).

- 2) Oliver is correct. As each triangle is isosceles we know that the two angles in each of the triangles, that are not the right angles, will be equal. This means that we can calculate the value of the angles in each triangle with the following calculation: $180^\circ - 90^\circ = 90^\circ$

$$90^\circ \div 2 = 45^\circ$$

Each of the missing angles will measure 45° .



- 1) Angle a measures 60° as each angle in an equilateral triangle always equals 60° .

Angle b measures 120°

$$180^\circ - 60^\circ = 120^\circ$$

- 2) Angle y measures 24°

$$180^\circ - 132^\circ = 48^\circ$$

$$48^\circ \div 2 = 24^\circ$$

Angle z measures 56°

$$180^\circ - 132^\circ = 48^\circ$$

$$180^\circ - (48^\circ + 76^\circ) = 56^\circ$$

- 3) a) Equilateral: 60° , 60° and 60°

Scalene: Many possible answers, for example 60° , 100° and 20°

Right-angled scalene: Many answers possible, for example 60° , 90° and 30°

- b) Isosceles: 50° , 50° and 80° or 50° , 65° and 65°

Scalene: Many possible answers, for example 50° , 100° and 30°

Right-angled scalene: 90° , 50° and 40°

