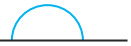
1) • $a + b + c =$ 
True

• Angle a and angle c both measure 60°.
False

• If angle a measures 55°, angle c will measure 25°.
False, it will measure 35°.

2) 75° is the correct missing piece.

3) a **= 34°**
b **= 33°**
c **= 15°**

1) a) Never true. The interior angles of a triangle will always sum to 180°. The length of the side does not affect the total of the interior angles.

b) Never true. Two obtuse angles can not be the interior angles of a triangle.

c) Always true. A triangle must always have at least two acute angles.

2) a) Monika is incorrect. For example, combining the pieces that measure 90°, 100° and 30° would give you 220° which is more than the angles of a triangle add to.

b) Robert is incorrect. For example, the angles he has chosen do add to 180° but they are not the only options. 90° + 80° + 10° and 70° + 80° + 30° also sum to 180°.

1) a **= 72°**
b **= 18°**
c **= 90°**

2) Angle x **measures 43°.**

3) a) a = 25°

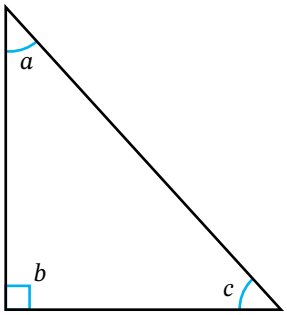
b) b = 22°

c) c = 68°

4) a) George's statement is false. The angles in a triangle add to 180°. 180 is an even number. Three odd numbers added together can not make an even number.

b) Freya's statement is false. If Freya has one angle that is a right angle then the two remaining angles must add to make 90°. This means that the two remaining angles must be les than 90° each. An angle that is less than 90° is an acute angle.

1) Decide whether the statements about this triangle are true or false.



- $a + b + c =$ _____

_____

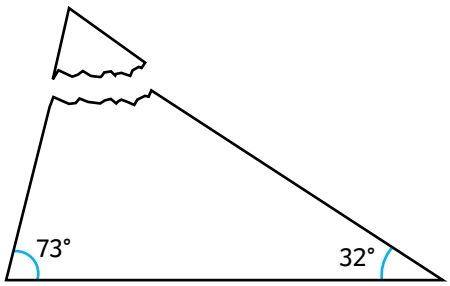
- Angle a and angle c both measure 60°.

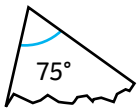
_____

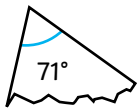
- If angle a measures 55°, angle c will measure 25°.

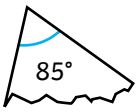
_____

2) One of the corners is torn from this triangle. Circle the corner that shows the angle of the missing corner.

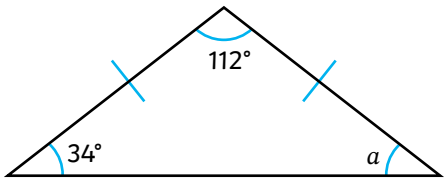


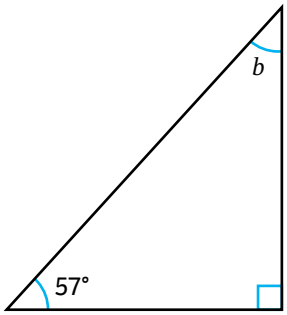


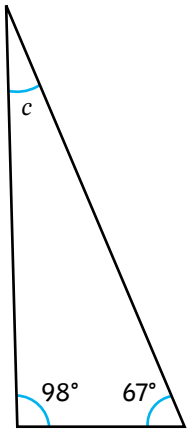




3) Calculate the missing angles.





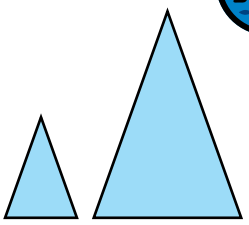


$a =$ _____ $b =$ _____ $c =$ _____

Impotant note: angles not drawn to scale, do not use a protractor.

1) Always, sometimes or never true? Prove it!

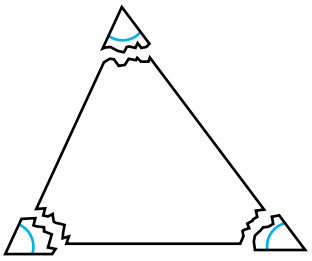
a) When this triangle is doubled in size, the interior angles also double in size.



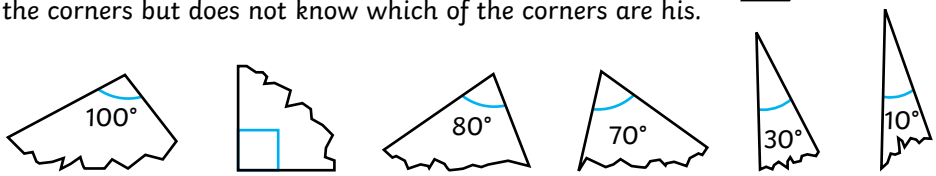
b) A triangle can have two obtuse interior angles.

c) A triangle can have two acute interior angles.

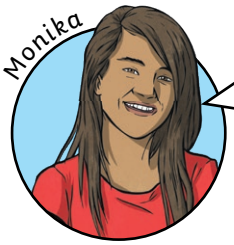
2) The teacher has torn the corners off a triangle to demonstrate that they all add up to 180 degrees.



Tayo draws a different scalene triangle and tears off the corners but does not know which of the corners are his.

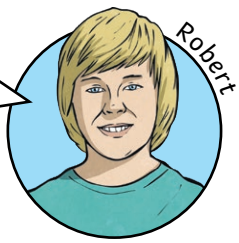


These children are trying to work out which three of the pieces could have come from Tayo's triangle. Explain whether you agree or disagree with each child's statement, giving reasons.



I think that any three of these pieces could have been from Tayo's triangle.

I disagree. I think that the pieces that measure 100°, 70° and 10° are the only three pieces that could have come from Tayo's triangle.



Impotant note: angles not drawn to scale, do not use a protractor.

1) What are the missing angles?

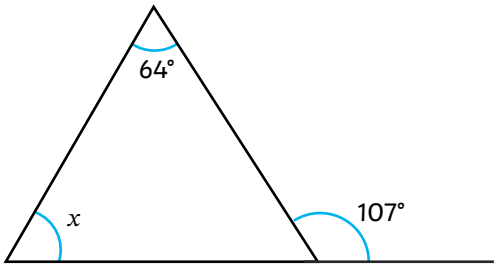
All these angles are from a type of scalene triangle.
Angle c is a right angle.
Angle a is an acute angle.
Angle c is five time the size of angle b.

a = _____

b = _____

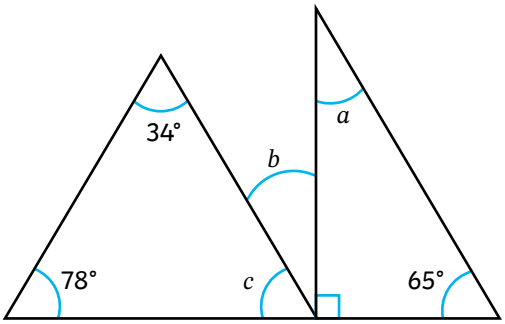
c = _____

2) Calculate the value of angle x. Use the box for your working out.



x = _____

3) Calculate the value of the missing angles. Use the box for your working out.



a = _____ b = _____ c = _____

4) Investigate whether each of these children's statements are true or false. Explain your answer fully.

a) George says, "Each angle in my triangle is an odd number."

b) Freya says, "My triangle has one right angle, one obtuse angle and one acute angle."

a) _____

_____

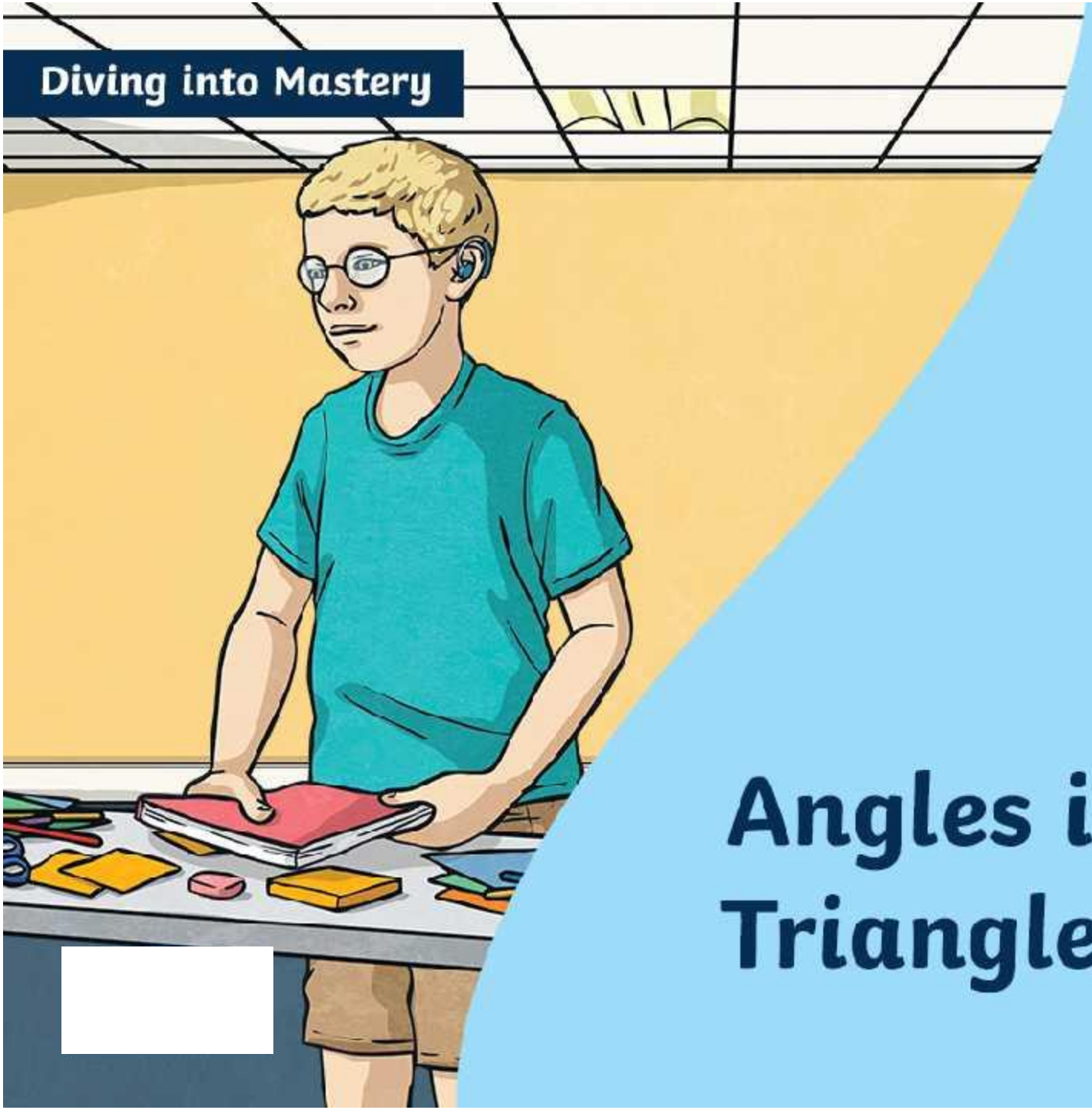
_____

b) _____

_____

_____

Impotant note: angles not drawn to scale, do not use a protractor.



Angles in a Triangle (1)

Diving into Mastery Guidance for Educators

Each activity sheet is split into three sections, diving, deeper and deepest, which are represented by the following icons:

Diving

Deeper

Deepest

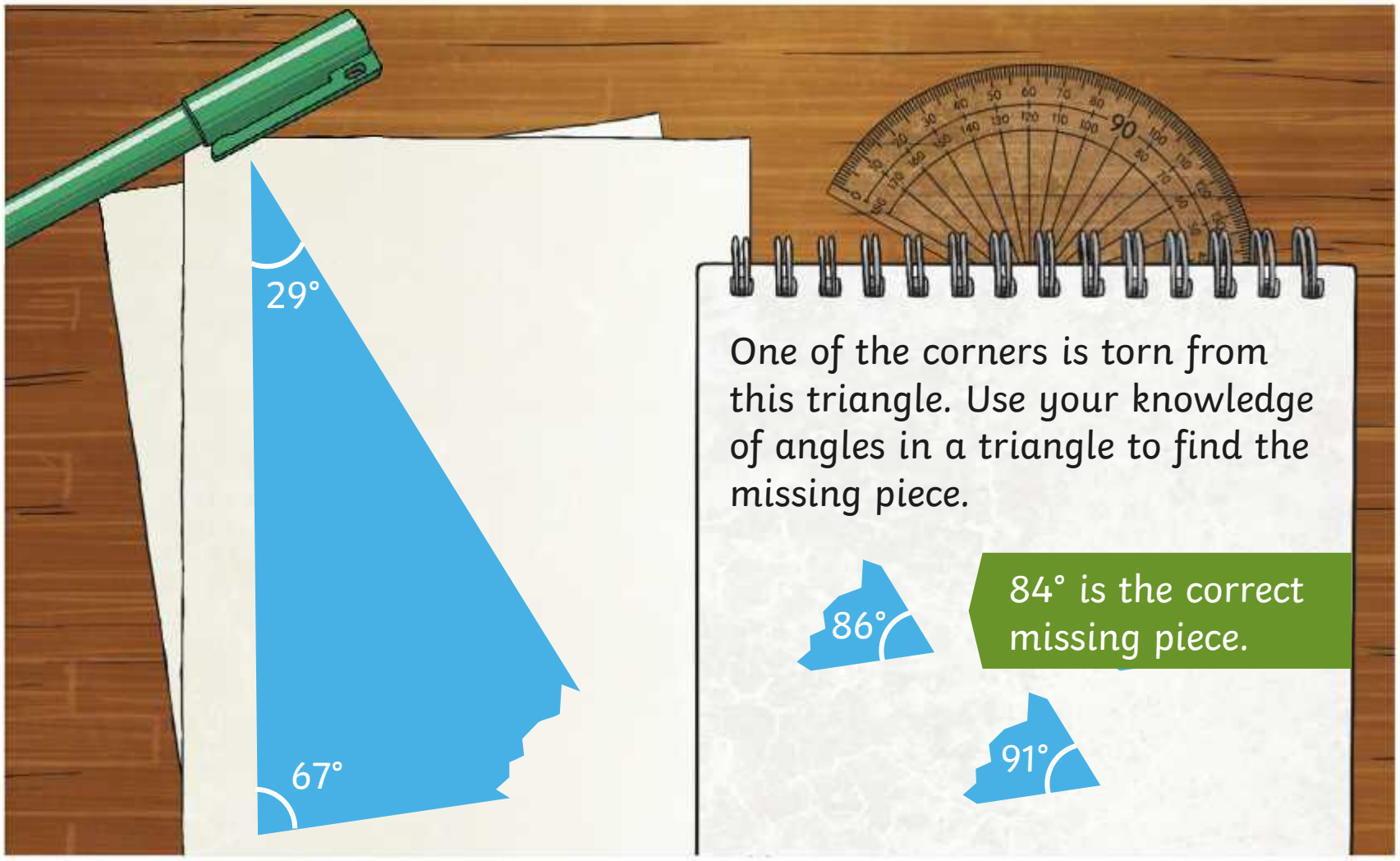
These carefully designed activities take your children through a learning journey, initially ensuring they are fluent with the key concept being taught; then applying this to a range of reasoning and problem-solving activities.

These sheets might not necessarily be used in a linear way. Some children might begin at the 'Deeper' section and in fact, others may 'dive straight in' to the 'Deepest' section if they have already mastered the skill and are applying this to show their depth of understanding.

Aim

- Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.

Angles in a Triangle (1) | Diving

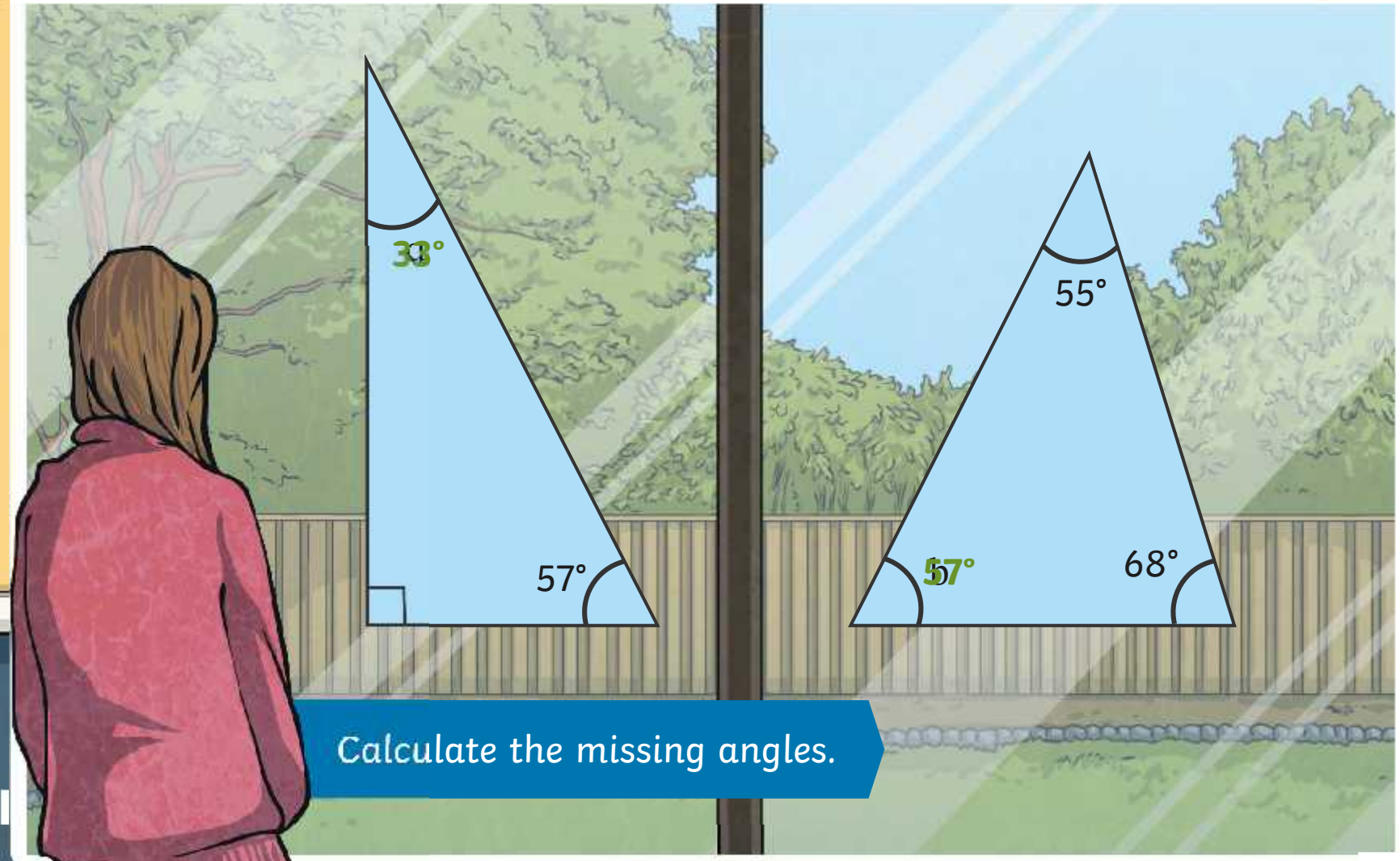


One of the corners is torn from this triangle. Use your knowledge of angles in a triangle to find the missing piece.

84° is the correct missing piece.

Angles in a Triangle (1)

Diving



Calculate the missing angles.

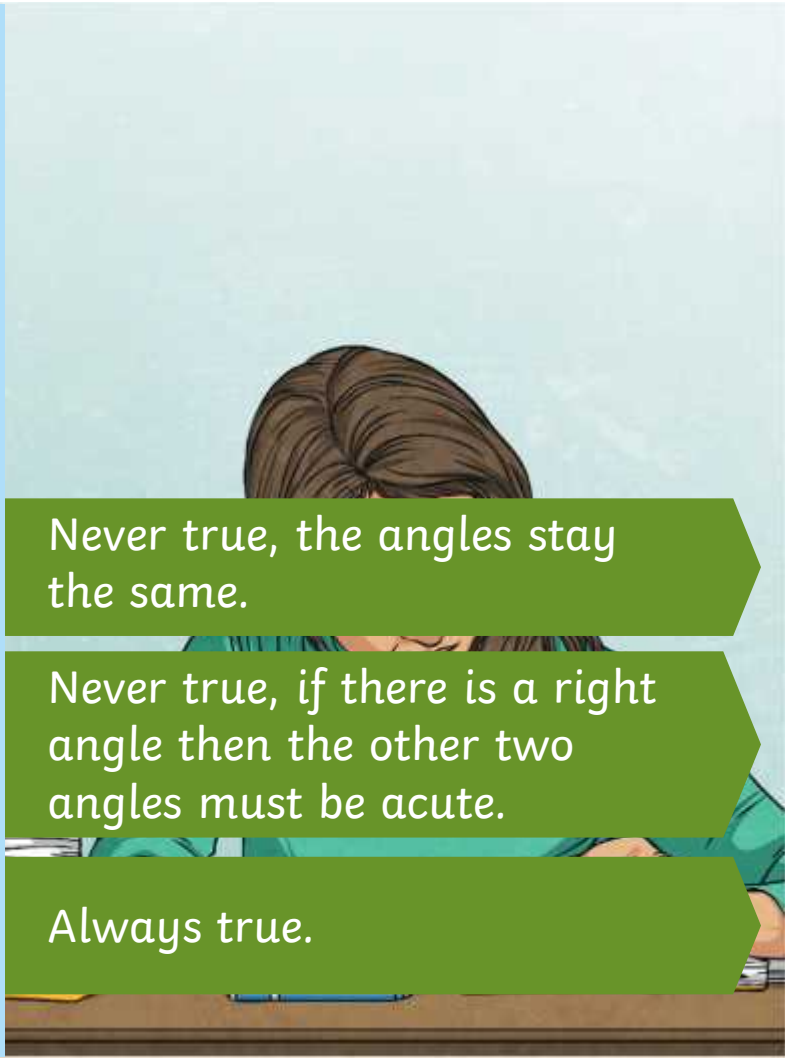
Angles in a Triangle (1) | Deeper

Always, sometimes or never true? Prove it!

When this triangle is halved, the interior angles are also halved.

A triangle can have one right angle and one obtuse angle.

If a triangle has an obtuse angle then the other two angles will be acute.



Never true, the angles stay the same.

Never true, if there is a right angle then the other two angles must be acute.

Always true.

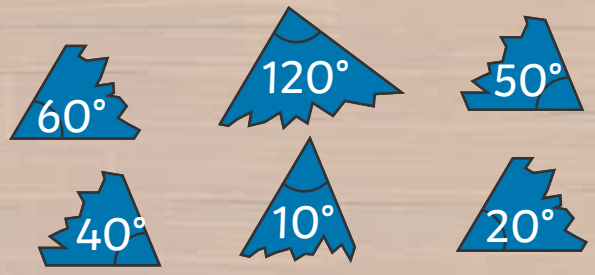
Angles in a Triangle (1) | Deeper

Adam draws a scalene triangle. He tears each of the corners off so he can measure them.

I think that the two pieces with the smallest angle measurements and the piece with the largest angle measurement came from Adam's triangle.

This is incorrect.
120°, 50° and 10 ° also combine to make 180°.

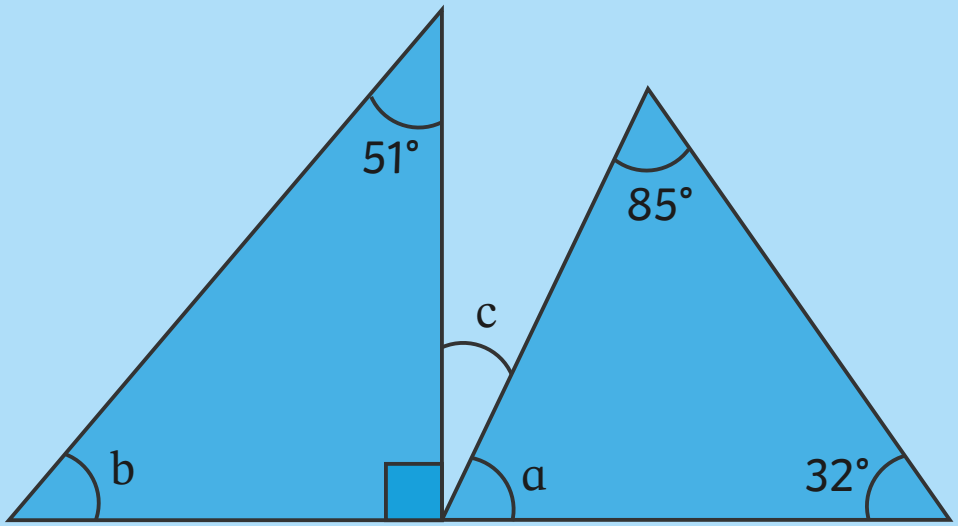
I think only the 120°, 40° and 20° pieces could have possibly come from Adam's triangle.



These ... Explain whether you agree or disagree with each child's statement, giving reasons.

Angles in a Triangle (1) | Deepest

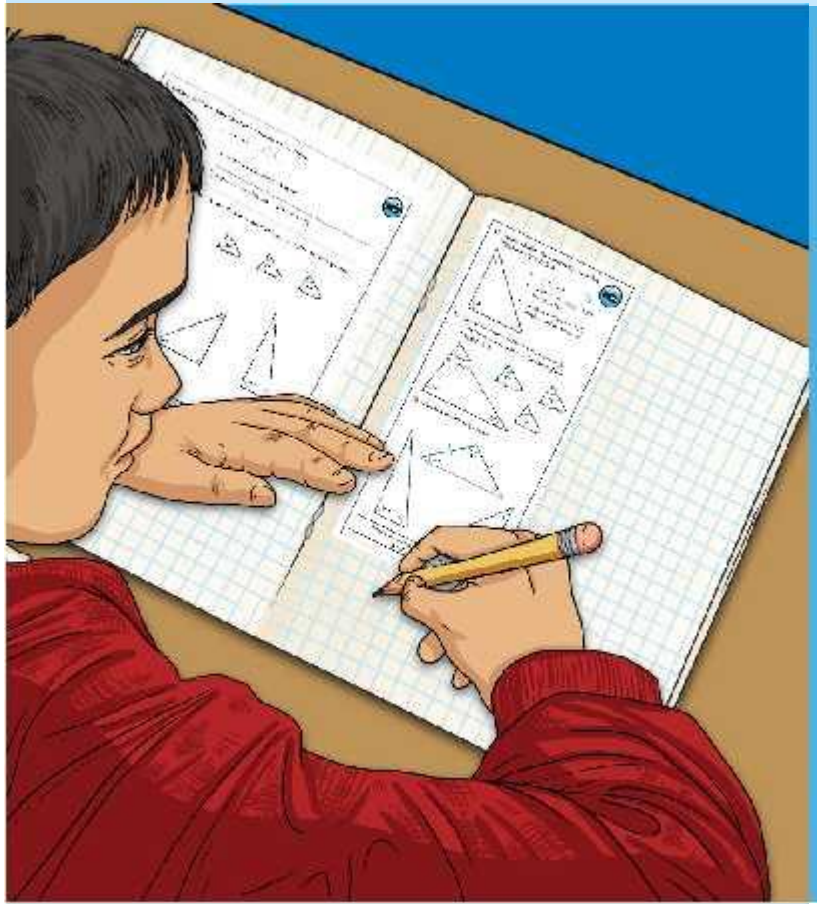
Calculate the value of each angle represented by a letter.

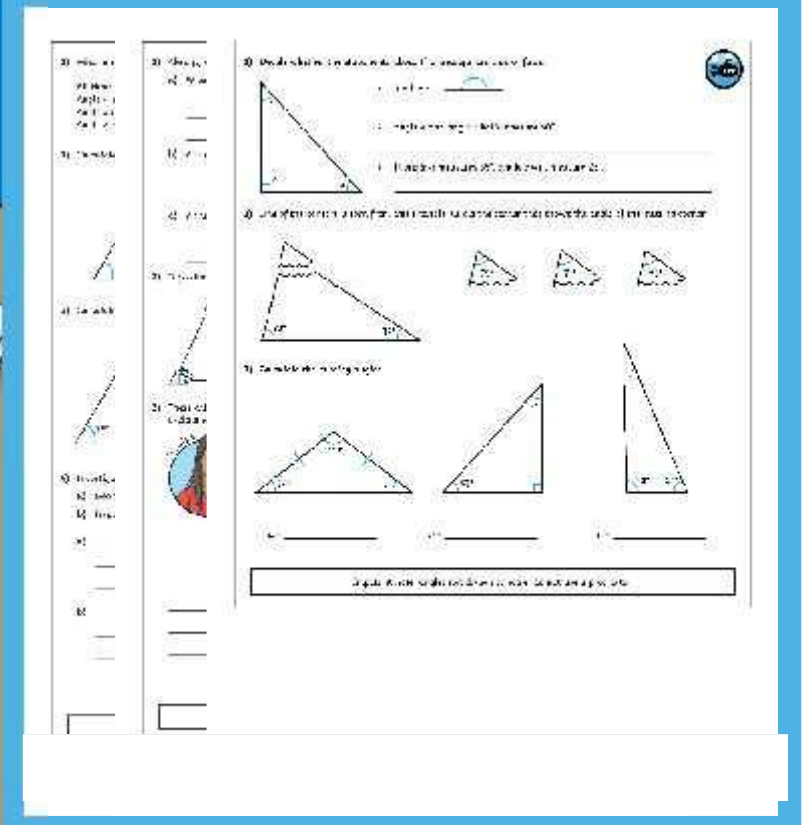


Angle a = 63° (85° + 32° = 117°, 180° - 117° = 63°)
Angle b = 39° (51° + 90° = 141°, 180° - 141° = 39°)
Angle c = 27° (90° + 63° = 153°, 180° - 153° = 27°)

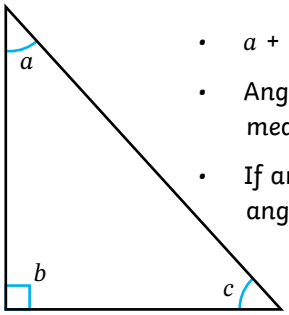
Angles in a Triangle (1)

Dive in by completing your own activity!



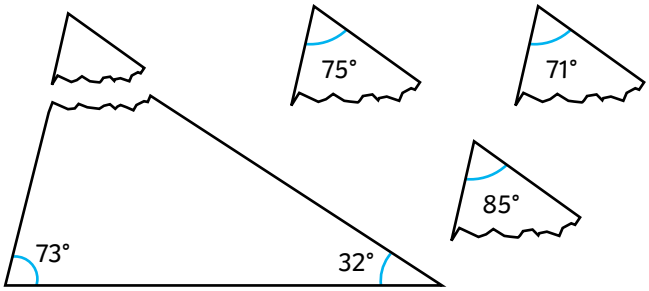


1) Decide whether the statements about this triangle are true or false.

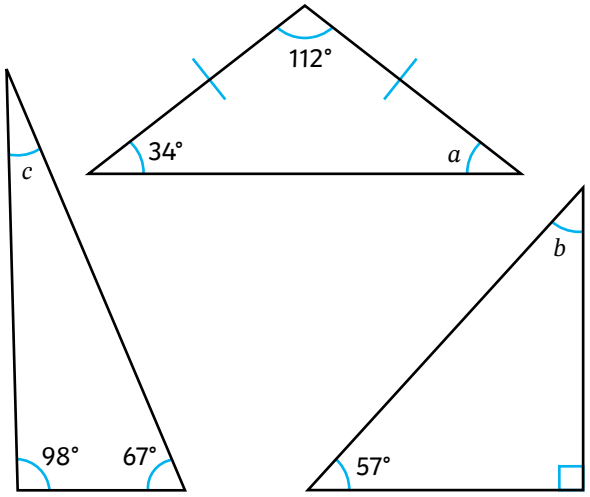


- $a + b + c =$ _____
- Angle a and angle c both measure 60°.
- If angle a measures 55°, angle c will measure 25°.

2) One of the corners is torn from this triangle. Circle the corner that shows the angle of the missing corner.

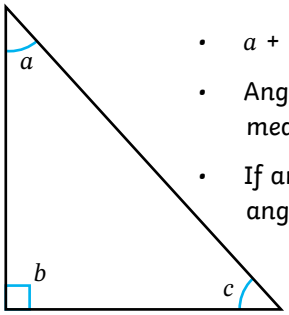


3) Calculate the missing angles.



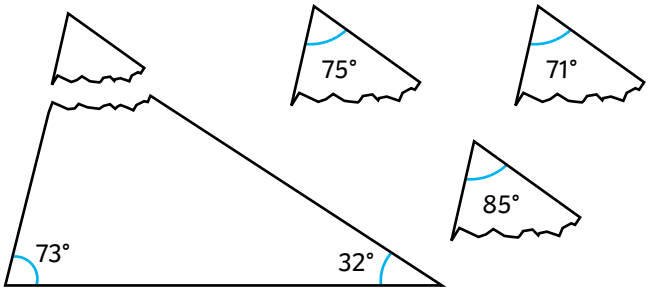
Impotant note: angles not drawn to scale, do not use a protractor.

1) Decide whether the statements about this triangle are true or false.

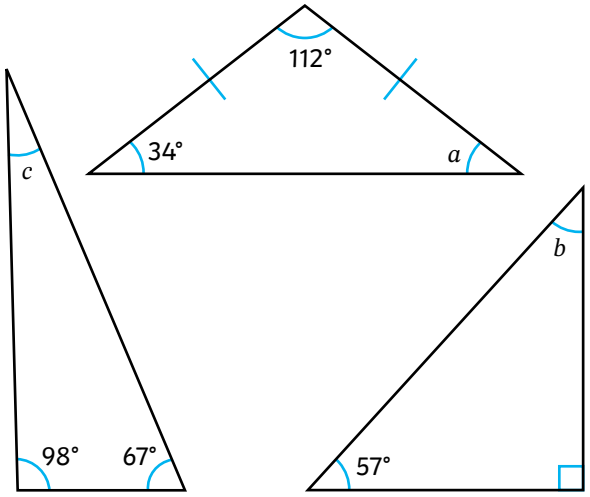


- $a + b + c =$ _____
- Angle a and angle c both measure 60°.
- If angle a measures 55°, angle c will measure 25°.

2) One of the corners is torn from this triangle. Circle the corner that shows the angle of the missing corner.



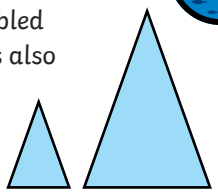
3) Calculate the missing angles.



Impotant note: angles not drawn to scale, do not use a protractor.

1) Always, sometimes or never true? Prove it!

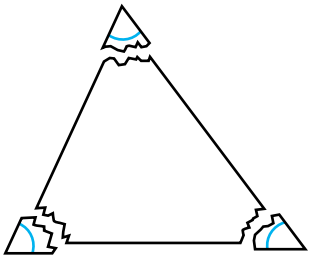
a) When this triangle is doubled in size, the interior angles also double in size.



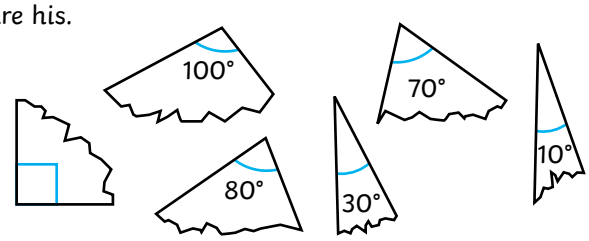
b) A triangle can have two obtuse interior angles.

c) A triangle can have two acute interior angles.

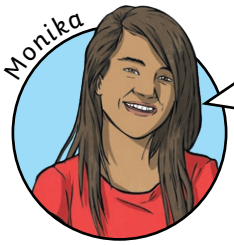
2) The teacher has torn the corners off a triangle to demonstrate that they all add up to 180 degrees.



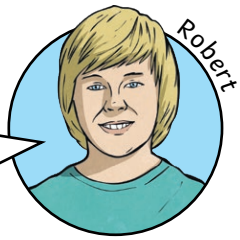
Tayo draws a different scalene triangle and tears off the corners but does not know which of the corners are his.



These children are trying to work out which three of the pieces could have come from Tayo's triangle. Explain whether you agree or disagree with each child's statement, giving reasons.



I think that any three of these pieces could have been from Tayo's triangle.



I disagree. I think that the pieces that measure 100°, 70° and 10° are the only three pieces that could have come from Tayo's triangle.

Impotant note: angles not drawn to scale, do not use a protractor.

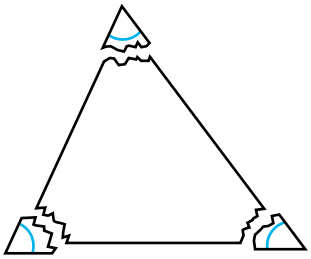
1) Always, sometimes or never true? Prove it!

a) When this triangle is doubled in size, the interior angles also double in size.

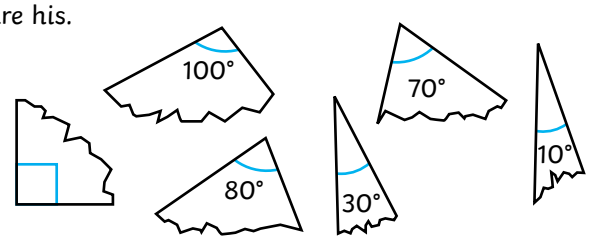
b) A triangle can have two obtuse interior angles.

c) A triangle can have two acute interior angles.

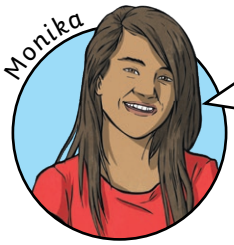
2) The teacher has torn the corners off a triangle to demonstrate that they all add up to 180 degrees.



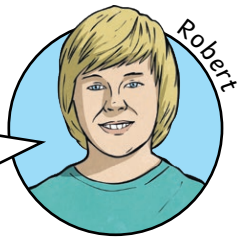
Tayo draws a different scalene triangle and tears off the corners but does not know which of the corners are his.



These children are trying to work out which three of the pieces could have come from Tayo's triangle. Explain whether you agree or disagree with each child's statement, giving reasons.



I think that any three of these pieces could have been from Tayo's triangle.



I disagree. I think that the pieces that measure 100°, 70° and 10° are the only three pieces that could have come from Tayo's triangle.

Impotant note: angles not drawn to scale, do not use a protractor.

1) What are the missing angles?

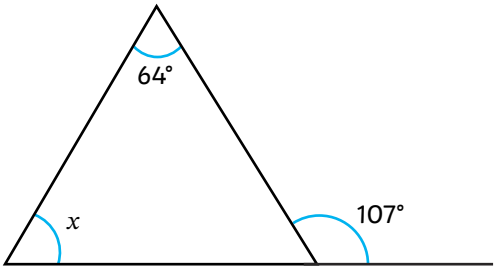
All these angles are from a type of scalene triangle.
Angle c is a right angle.
Angle a is an acute angle.
Angle c is five time the size of angle b.

a = _____

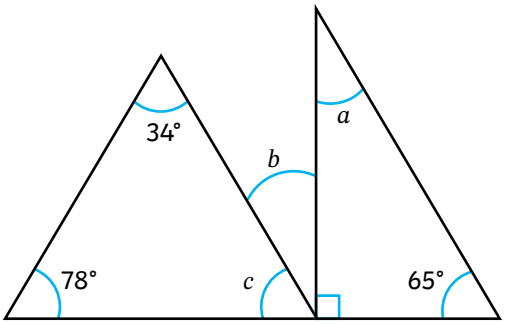
b = _____

c = _____

2) Calculate the value of angle x.



3) Calculate the value of the missing angles. Use the box for your working out.



4) Investigate whether each of these children's statements are true or false. Explain your answer fully.

a) George says, "Each angle in my triangle is an odd number."

b) Freya says, "My triangle has one right angle, one obtuse angle and one acute angle."

Impotant note: angles not drawn to scale, do not use a protractor.

1) What are the missing angles?

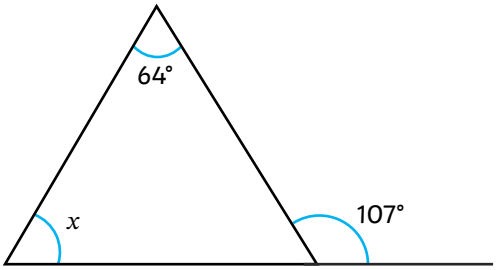
All these angles are from a type of scalene triangle.
Angle c is a right angle.
Angle a is an acute angle.
Angle c is five time the size of angle b.

a = _____

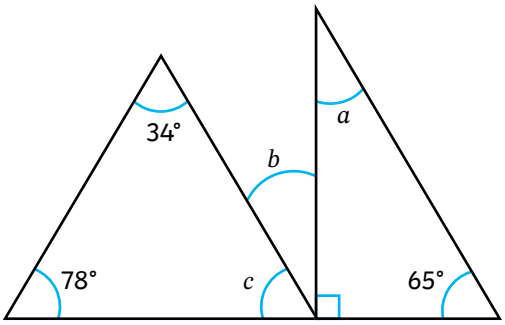
b = _____

c = _____

2) Calculate the value of angle x.



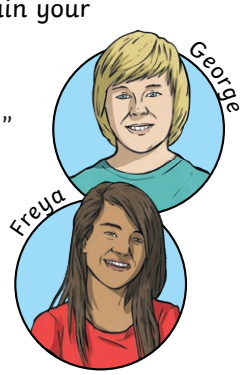
3) Calculate the value of the missing angles. Use the box for your working out.



4) Investigate whether each of these children's statements are true or false. Explain your answer fully.

a) George says, "Each angle in my triangle is an odd number."

b) Freya says, "My triangle has one right angle, one obtuse angle and one acute angle."



Impotant note: angles not drawn to scale, do not use a protractor.