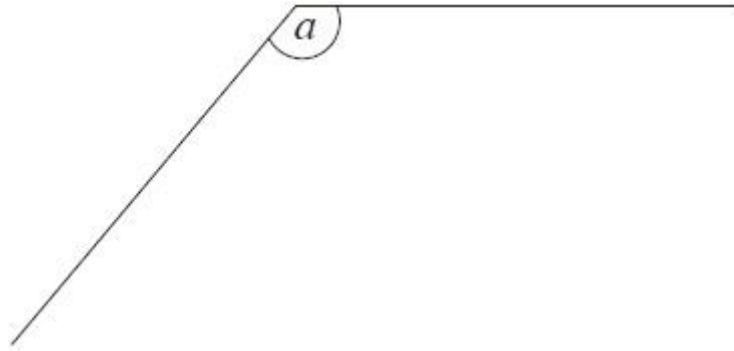


Q1.

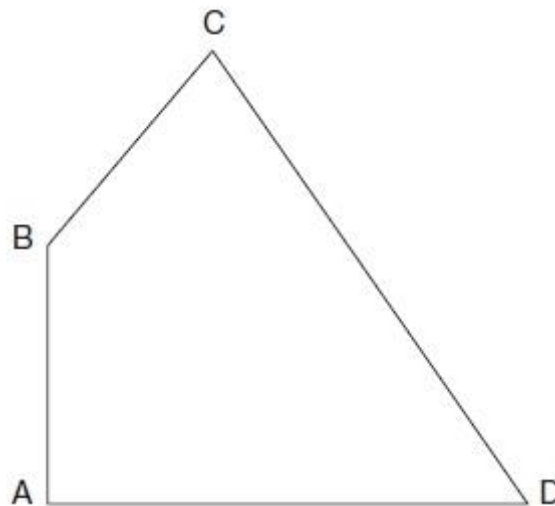


Measure angle a .

a is

1 mark

Q2.

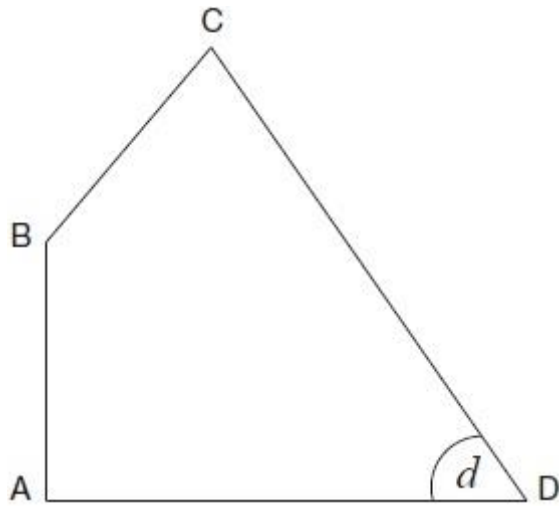


What is the perimeter of the shape, **in millimetres**?

Use a ruler.

 mm

1 mark



Measure the size of angle d .

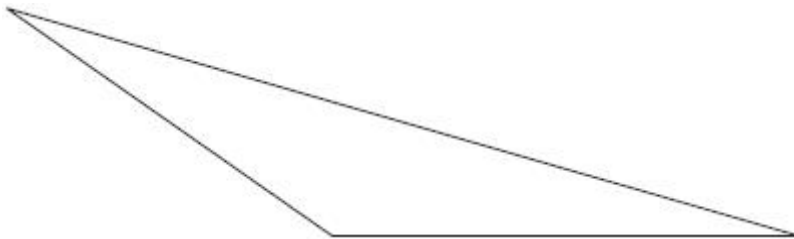
Use an angle measurer.

d is

1 mark

Q3.

Here is a triangle.



Measure the shortest side accurately, in centimetres.

cm

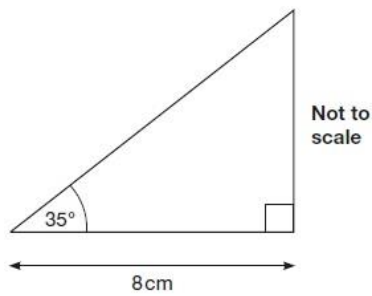
1 mark

Measure the largest angle.

1 mark

Q4.

Here is a sketch of a triangle. It is not drawn to scale.



Draw the full-size triangle **accurately** below.

Use an angle measurer (protractor) and a ruler.

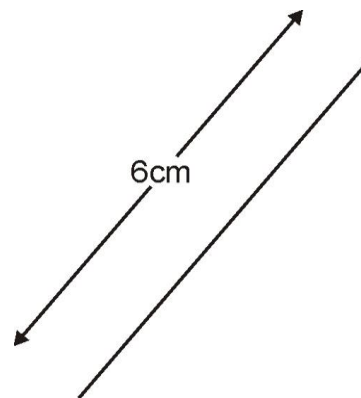
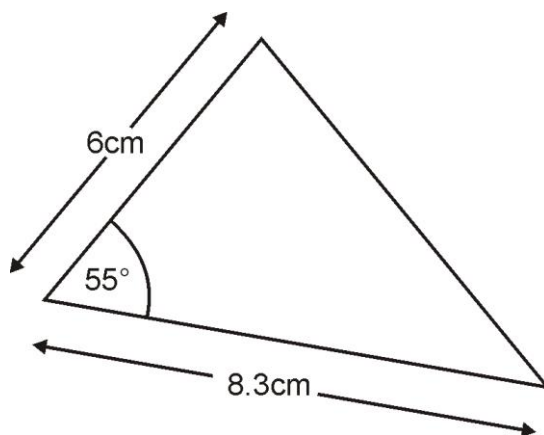
One line has been drawn for you.



2 marks

Q5. Here is a sketch of a triangle.

It is not drawn to scale.



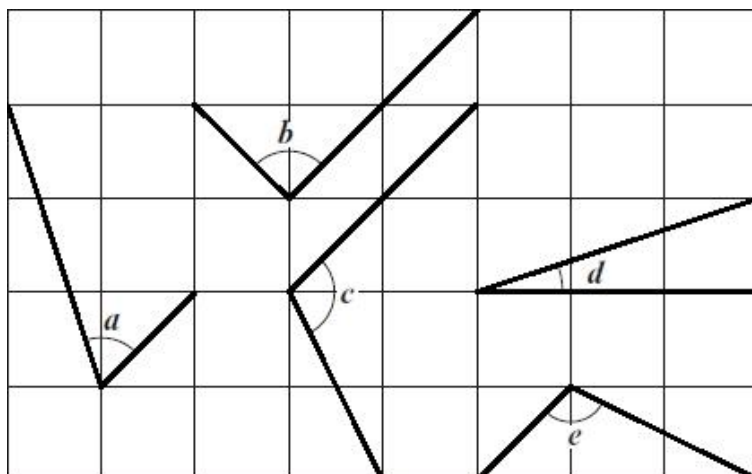
Using the line given, draw the full-size triangle accurately.

Use a protractor (angle measurer) and a ruler.

One line has been drawn for you.

2 marks

Q1. Here are five angles marked on a grid of squares.



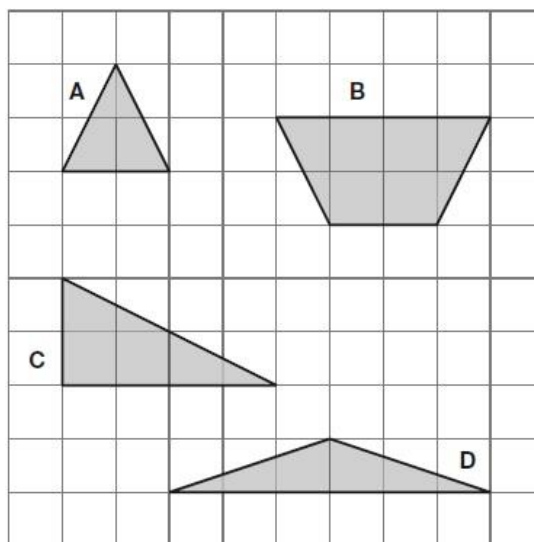
Write the letters of the angles that are **obtuse**.

_____ 1 mark

Write the letters of the angles that are **acute**.

_____ 1 mark

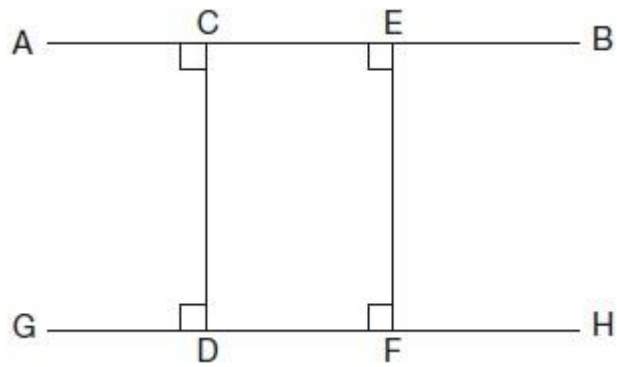
Q2. Here are four shapes on a grid.



Write the letters of **all** the shapes that have **only two** acute angles.

_____ 1 mark

Q3.



Tick **all** the correct statements.

AB is parallel to CD

GH is parallel to AB

CD is perpendicular to GH

EF is perpendicular to CD

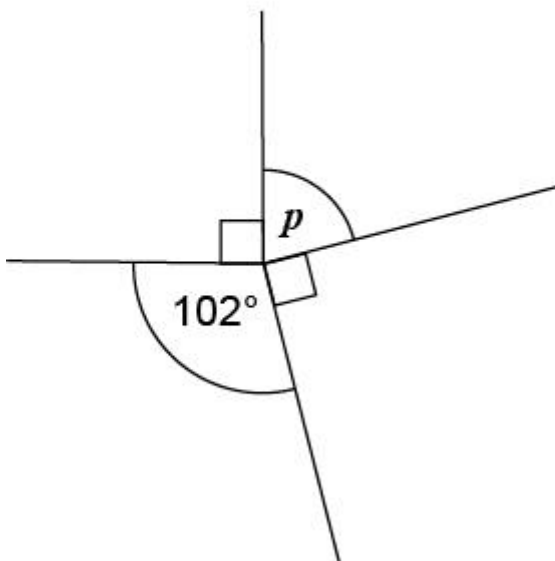
1 mark

Q4.

Calculate the size of angle p in the diagram.

Do not use a protractor (angle measurer).

not drawn accurately

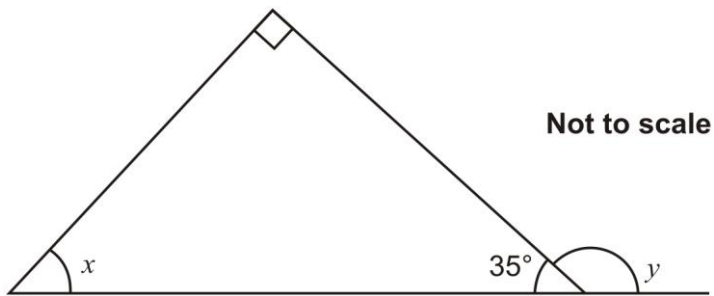


Show your method

2 marks

Q5.

Look at this diagram.



Calculate the size of angle x and angle y .

Do **not** use a protractor (angle measurer).

$x =$

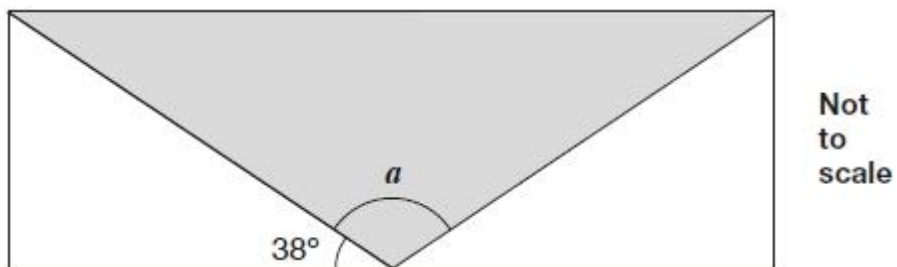
1 mark

$y =$

1 mark

Q6.

A shaded **isosceles** triangle is drawn inside a rectangle.



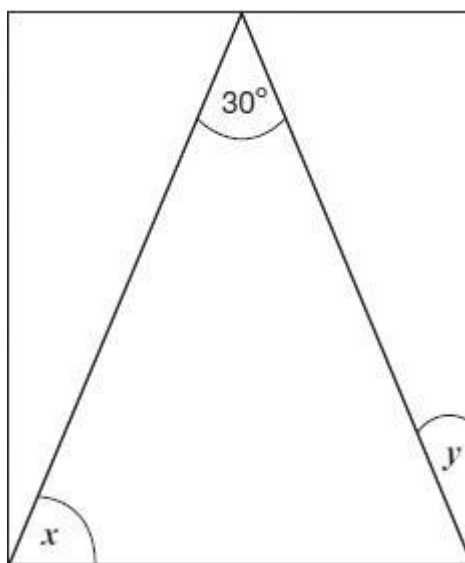
Calculate the size of angle a .

Show your method

2 marks

Q7.

Here is an **isosceles** triangle inside a rectangle.



Not to scale

Calculate the sizes of angles x and y .

Show your method

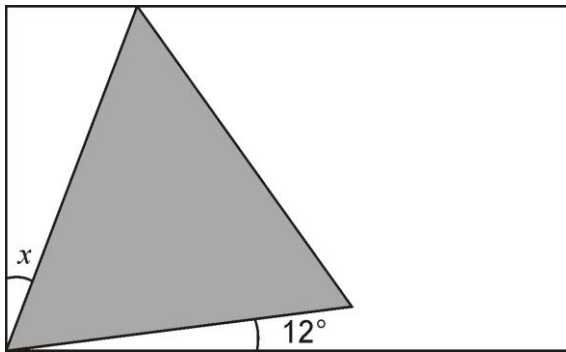
$y =$ °

$x =$ °

2 marks

Q8.

Here is an **equilateral triangle** inside a **rectangle**.



Not to scale

Calculate the value of angle x .

Do **not** use a protractor (angle measurer).

Show your method

°

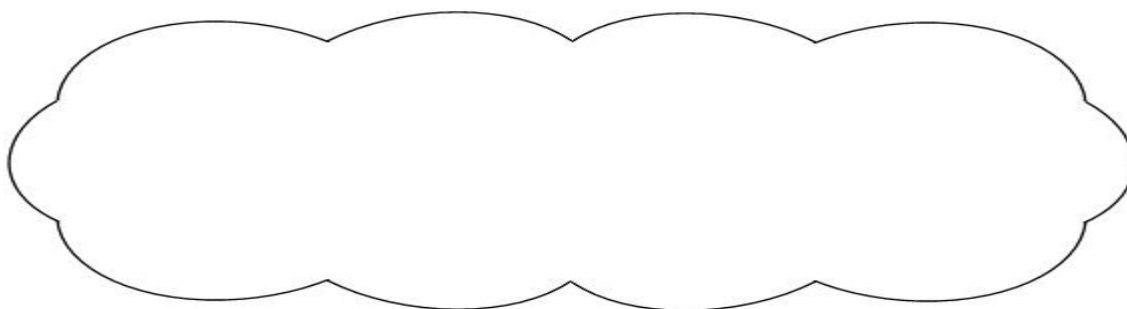
2 marks

Q9. Kirsty says,



When you double the size of an acute angle, you always get an obtuse angle.

Explain why Kirsty is **not** correct.



1 mark

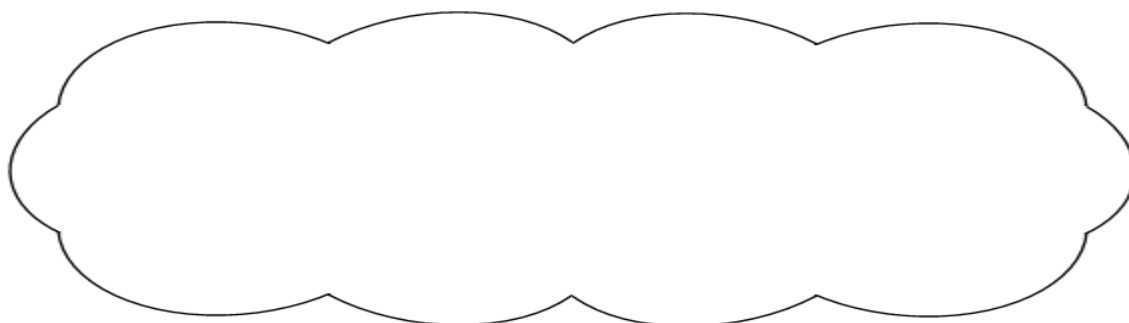
Q10. Two of the angles in a triangle are 70° and 40°

Jack says,



The triangle is equilateral.

Explain why Jack is **not** correct.



1 mark

Mark schemes

Q1. Award **ONE** mark for an answer in the range of 128 to 132 inclusive.

[1]

Q2.(a) Award **ONE** mark for answers given in the range 202 – 218 (mm) inclusive.

1

(b) Award **ONE** mark for answers given in the range 53° – 57° inclusive.

1
[2]

Q3. (a) Answer is teacher's measurement +/- 2 mm.

1

(b) Answer in the range 143° to 147° **inclusive**.

Commentary: Some measures questions specify the unit to be used. Where the unit is given in the question lozenge and in the answer box, it must be used. If pupils express their answers using a different unit, e.g. as 57 mm in the first part of this question, the mark will not be awarded.

1
[2]

Q4. Award **TWO** marks for a completed triangle that has **all** of the following three points:

- an angle in the range 33° to 37° inclusive for the angle marked 35°
- an angle in the range 88° to 92° inclusive for the right angle
- the triangle has been drawn on an 8cm line (either on the given line or a line drawn), provided they have constructed both angles within the tolerance of the line 7.9 cm to 8.1 cm.

If the answer is incorrect, award **ONE** mark for a completed triangle and **TWO** of the three points correct.

Accept drawings where any side has been extended past a vertex.

*When considering whether the triangle is completed, **do not** accept:*

- a quadrilateral or another shape drawn

OR

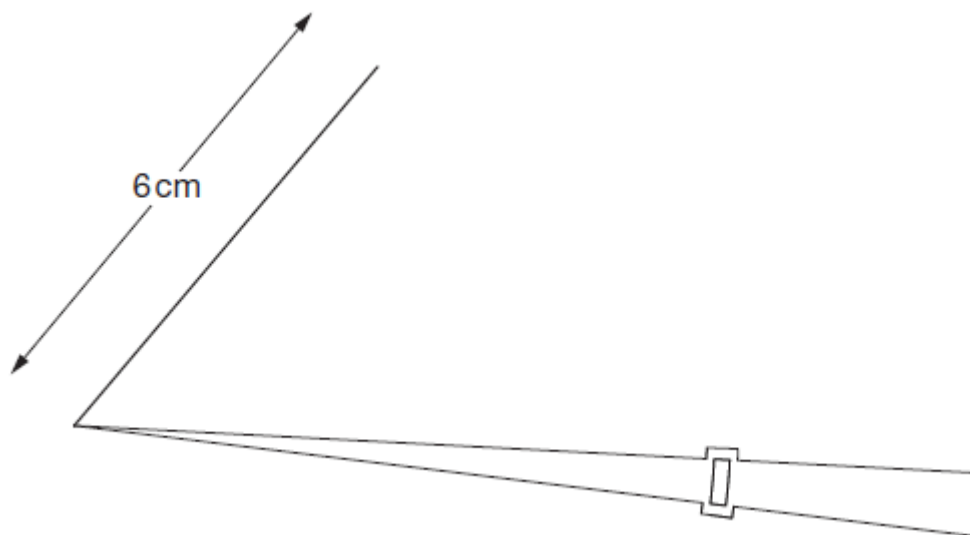
- a curved line that is used to complete the shape

OR

- sides not meeting to form a vertex.

Up to 2m
[2]

Q5. Award **TWO** marks for a triangle drawn with an angle in the range 53° to 57° inclusive **AND** length of base line in the range 8.2cm to 8.4cm inclusive (ie lower vertex of the triangle within the inner box on the diagram, see below).



If the answer is incorrect, award **ONE** mark for:

- a completed triangle drawn with an angle in the range 53° to 57° inclusive.

OR

- a completed triangle drawn with an angle in the range 52° to 58° inclusive **AND** length of base line 8.1cm to 8.5cm inclusive.

Accept drawings where any side has been extended past a vertex.

Accept drawings which do not use the given 6cm line, provided they have used a line with a length in

the range 5.9cm to 6.1cm inclusive.

Accept for **ONE** mark drawings not using the given 6cm line which have used a line **outside** the range 5.9cm to 6.1cm inclusive, provided they have an angle in the range 53° to 57° inclusive **AND** a base line in the range 8.2cm to 8.4cm inclusive.

Accept for **ONE** mark drawings of **incomplete triangles**, provided they have an angle in the range 53° to 57° inclusive **AND** a base line in the range 8.2cm to 8.4cm inclusive.

Up to 2m
[2]

Q1.(a) c **AND** e Letters may be given in either order.

(b) a **AND** d Letters may be given in either order.

1

1

[2]

Q2. Award **ONE** mark for the correct answer of B, C **AND** D.

Accept correct letters in any order.

Accept alternative unambiguous positive indication of the correct answer.

[1]

Q3. Award **ONE** mark for two boxes ticked correctly, as shown:

AB is parallel to CD	<input type="checkbox"/>
GH is parallel to AB	<input checked="" type="checkbox"/>
CD is perpendicular to GH	<input checked="" type="checkbox"/>
EF is perpendicular to CD	<input type="checkbox"/>

Accept alternative unambiguous positive indication of the correct answer.

[1]

Q4. Award **TWO** marks for the correct answer of 78°

If the answer is incorrect, award **ONE** mark for evidence of an appropriate method, e.g.

$$90 + 90 + 102 = 282$$

$$360 - 282 =$$

[2]

Q5. (a) $x = 55^\circ$

(b) $y = 145^\circ$

If the answers for (a) and (b) are transposed, but otherwise correct, award **ONE** mark only, in the (b) box.

1

[2]

Q6. Award **TWO** marks for the correct answer of 104° .

If the answer is incorrect, award **ONE** mark for evidence of an appropriate method, e.g:

$$\bullet \quad 180 - 38 - 38 = a$$

Answer need not be obtained for the award of **ONE** mark.

Up to 2
[2]

Q7. Award **TWO** marks for the correct answer of $x = 75$ **AND** $y = 15$

If the answer is incorrect, award **ONE** mark for evidence of an appropriate method calculating both angles, e.g.

$$\bullet \quad 180 - 30 = 150$$

$$150 \div 2 = 70 \text{ (error)}$$

$$90 - 70$$

OR

Award **ONE** mark for either correct x OR y .

Answer need not be obtained for the award of **ONE** mark.

If there is no evidence of an appropriate method and the values for x **AND** y are incorrect, accept for **ONE** mark $x + y = 90$, unless x is between 65 – 69 (inclusive) **AND** y is between 21 – 25 (inclusive).

Up to 2m
[2]

Q8. Award **TWO** marks for the correct answer of 18°

Calculation need not be performed for the award of the mark.

If the answer is incorrect, award **ONE** mark for evidence of an appropriate method, eg $90 - 60 - 12$

Up to 2
[2]

Q9. An explanation that includes a correct counter example, e.g.

- When you double 10° it is not obtuse
- $2 \times 27^\circ = 54^\circ$
- Double 45° is a right angle not obtuse

OR

An explanation that demonstrates where the statement in the question is not correct, e.g.

- If the acute angle is less than 45° then doubling it will be less than 90° , so it won't be obtuse (more than 90°).

Do not accept vague or incomplete explanations, e.g.

- Sometimes it will be acute
- Some acute angles are half an obtuse angle, but not all
- When you double an acute angle, you get a right angle

Do not accept explanations which include incorrect mathematics or incorrect information that is relevant to the explanation, e.g.

- $20^\circ\text{C} \times 2 = 40^\circ\text{C}$
- $20\% \times 2 = 40\%$

[1]

Q10. An explanation showing an understanding:

- that this specific triangle has angles 70, 70 and 40

OR

- of the properties of an equilateral triangle – all angles are equal (60°)

and therefore that this triangle cannot be equilateral, e.g.

- The angles aren't 60°
- There is not a 60° angle
- It has two different angles (70° and 40°) so it can't be equilateral
- The angles aren't the same
- An equilateral triangle has $60^\circ + 60^\circ + 60^\circ$
- All the angles are the same in an equilateral triangle
- It's an isosceles triangle.

(In the context of this question, the term isosceles triangle is treated as not including equilateral triangles as a special type, as the national curriculum does not specify this at key stage 2.)

Do not accept vague or incomplete explanations, e.g.

- The other angle is 70°
- They aren't (all) the same. (No reference to angles)
- An equilateral triangle has equal angles. (Does not say all.)

Do not accept explanations which include incorrect mathematics or incorrect information that is relevant to the explanation, e.g.

- $40 + 70 = 110 + 70 = 180$

[1]