Edexcel B (R)

Geometry

2022 International GCSE Advance Information

Sparx Topics & Key Questions

We are always looking for ways to support maths teachers and students. In order to help you and your year 11s this year we've pulled together a list of key questions which may be useful to practise with your students based on the exam board topic lists.

These 35 key questions are all taken from our library of over 45,000 high-quality questions in Sparx Maths. If you are a Sparx Maths School then your students can use the Topic Codes provided to search the full content library directly within the independent learning section of Sparx Maths to help target their revision.

Please note this is not an exhaustive topic guide it is simply designed to help you pull together some key questions to use to check for understanding in lessons, starters, or as worksheets with your learners.

Geometry	Topics	Sparx Topic Codes
Angles and shapes	Angle properties of parallel lines, triangles and polygons	B115, B952, B639
	Construction	B771, B560
	Congruent triangles	B491
	Circle properties	B713, B482
	Similarity	B455
Pythagoras' Theorem	Pythagoras in 2-D	B251
	Pythagoras in 3-D	B286

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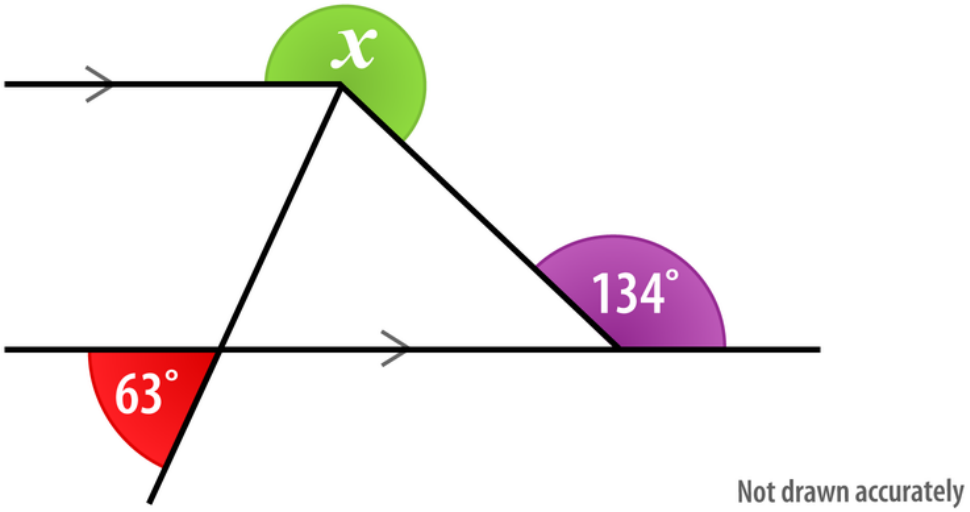
Angles and shapes - Angle properties of parallel lines, triangles and polygons

Angles on parallel lines B115

Find the size of angle x and explain how you found your answer.

Give your answer in degrees $(^\circ)$.



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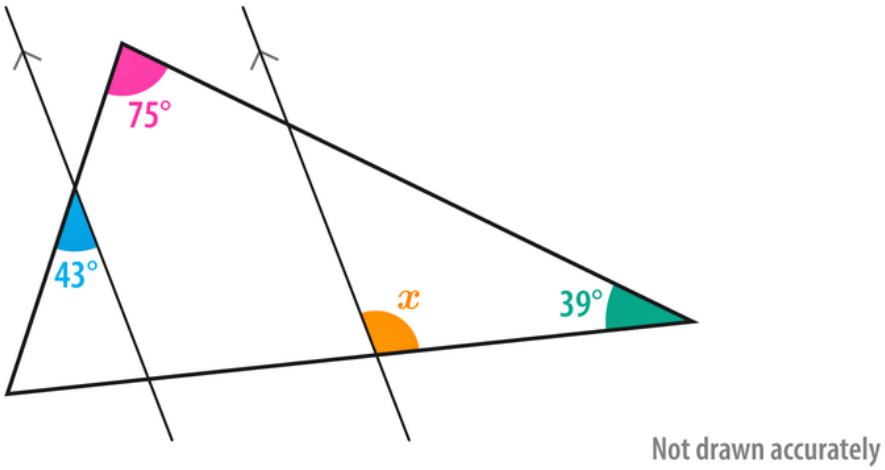
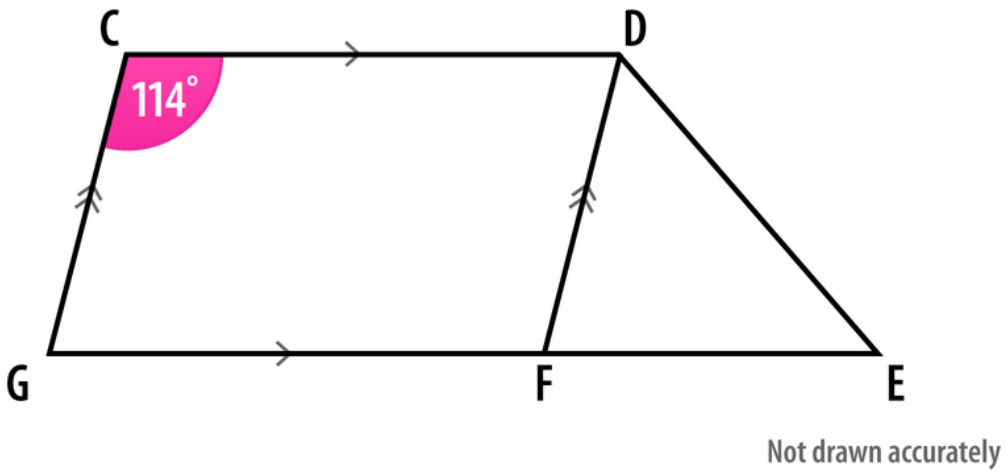
Find the size of angle x.

Give your answer in degrees $(^\circ)$.



Using quadrilateral properties to find angles **B952**

The quadrilateral below is formed from a parallelogram and a triangle.
a) What is the name of this type of quadrilateral?
b) Work out the size of the angle DFE. Give your answer in degrees $(^\circ)$.



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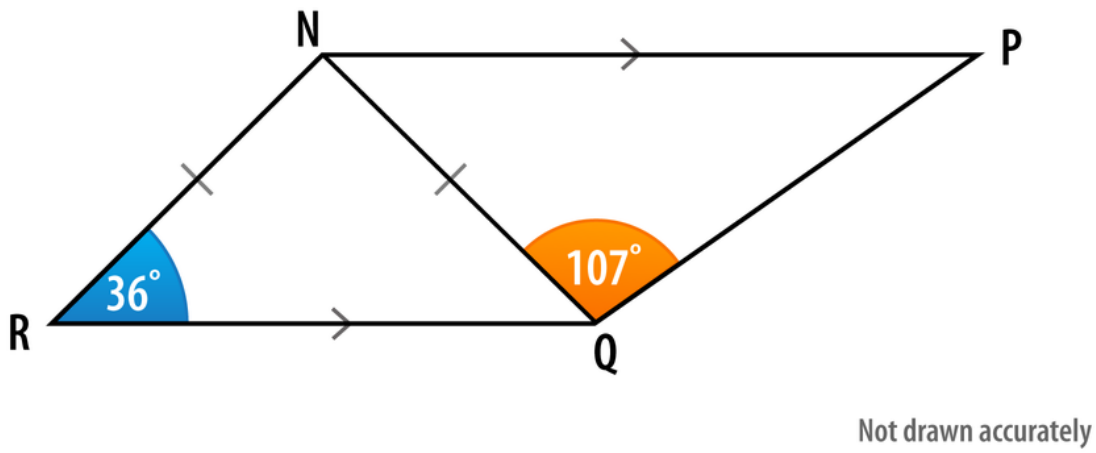
Look at the quadrilateral below.
Calculate the size of angle NPQ.
Give your answer in degrees $(^\circ)$.



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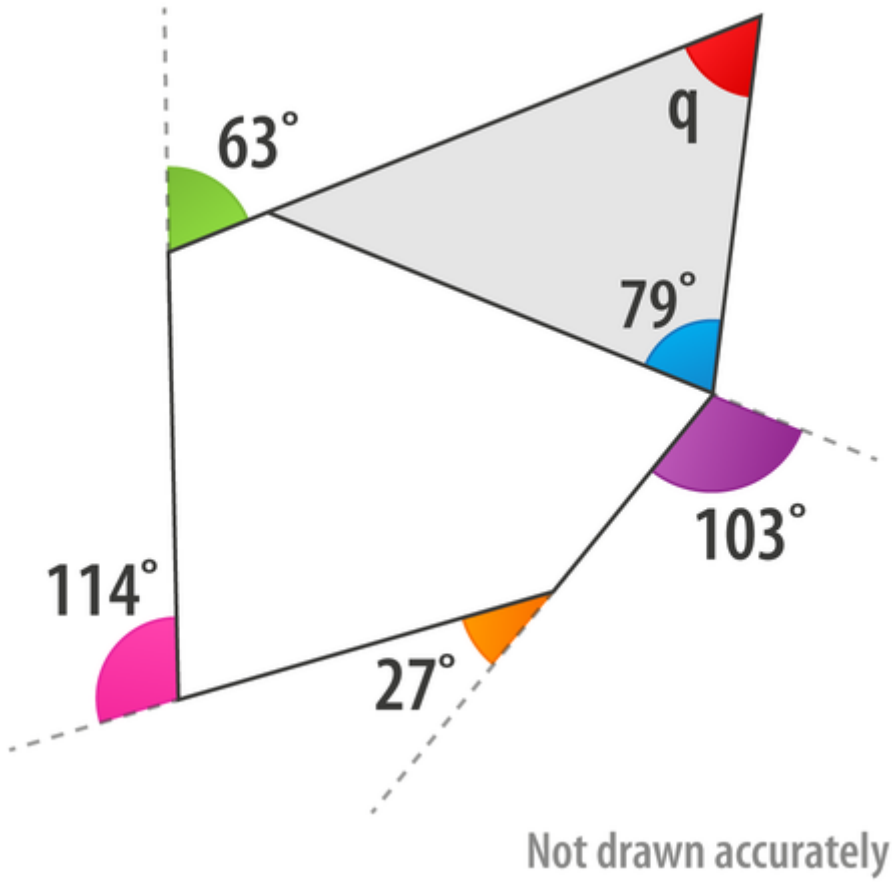
Angles in polygons **B639**

A triangle is placed on top of an irregular pentagon, as shown.

Work out the size of the angle marked q.
Give your answer in degrees $(^\circ)$.



Each of the interior angles of a regular polygon is 156°.

How many sides does this polygon have?

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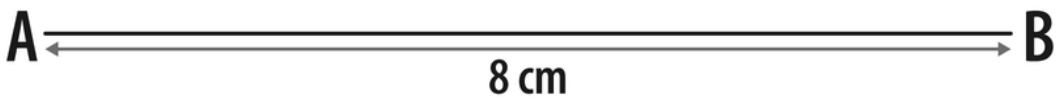
Angles and shapes - Construction

Mixed problems: Constructing bisectors and perpendicular lines B771

Draw line AB as shown.

Construct the perpendicular bisector of line AB.
You must show all of your construction lines.



Not drawn accurately

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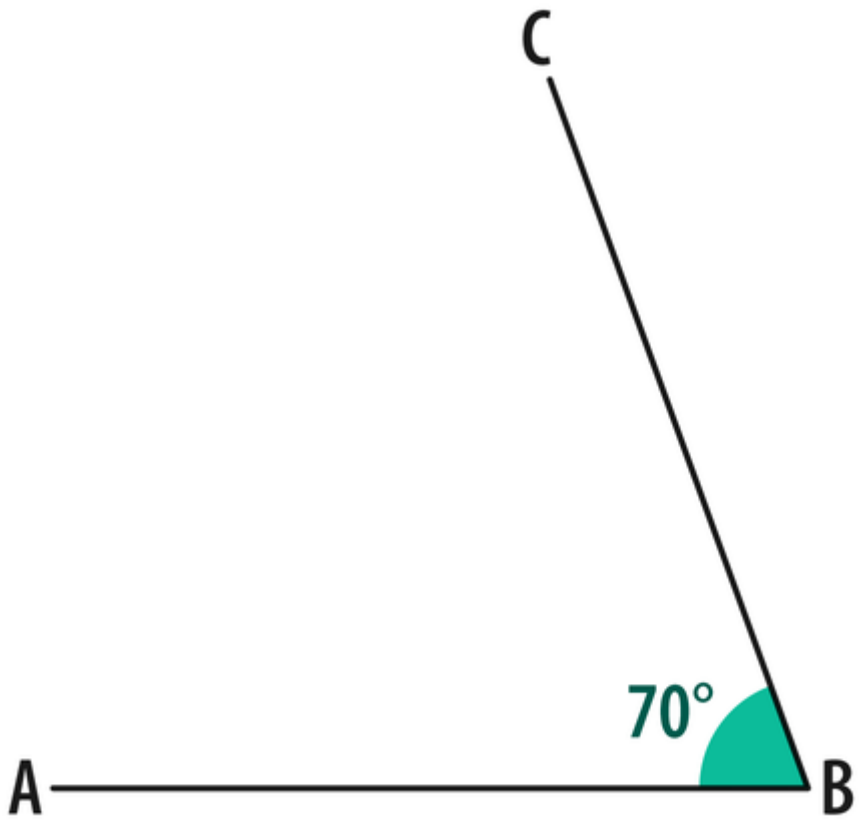
Use a ruler and a protractor to draw angle ABC as shown.

Then, using only a ruler and a pair of compasses, construct the bisector of angle ABC.
You must show all of your construction lines.



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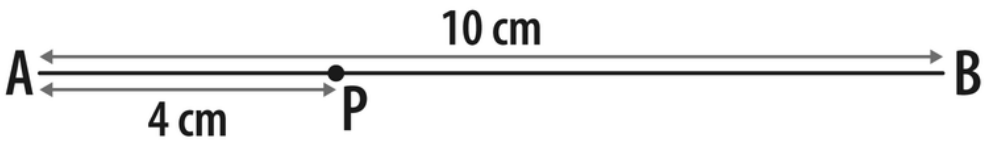
Draw line AB and point P.

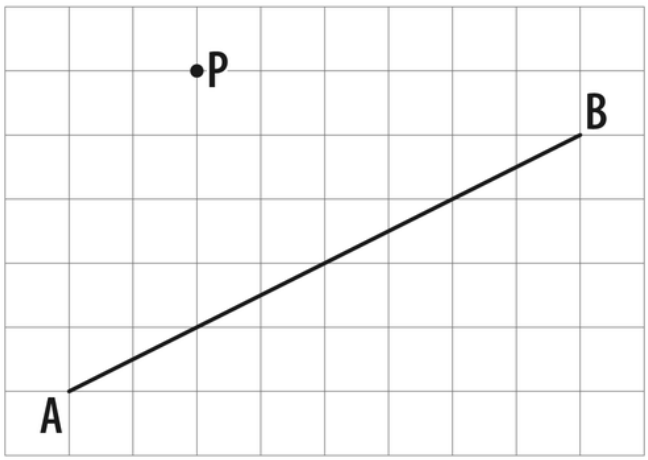
Construct the perpendicular to line AB which passes through point P.
You must show all of your construction lines.



Not drawn accurately

On squared paper, draw the line AB and point P as shown below.

Construct the perpendicular from point P to the line AB.
You must show all of your construction lines.



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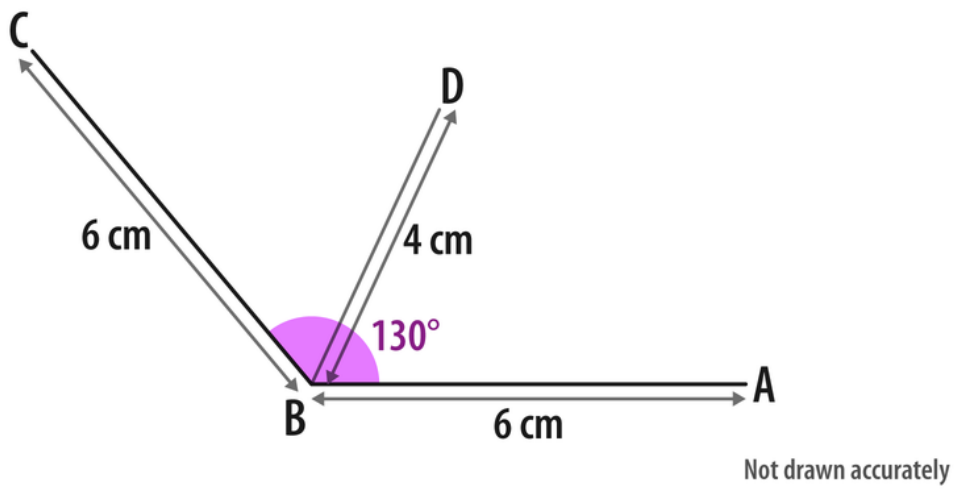
Use a ruler and a protractor to draw angle ABC as shown.

Then, using only a ruler and a pair of compasses, construct line BD which bisects angle ABC. You must show all of your construction lines.

Measure the length of CD in your drawing to 1 d.p.



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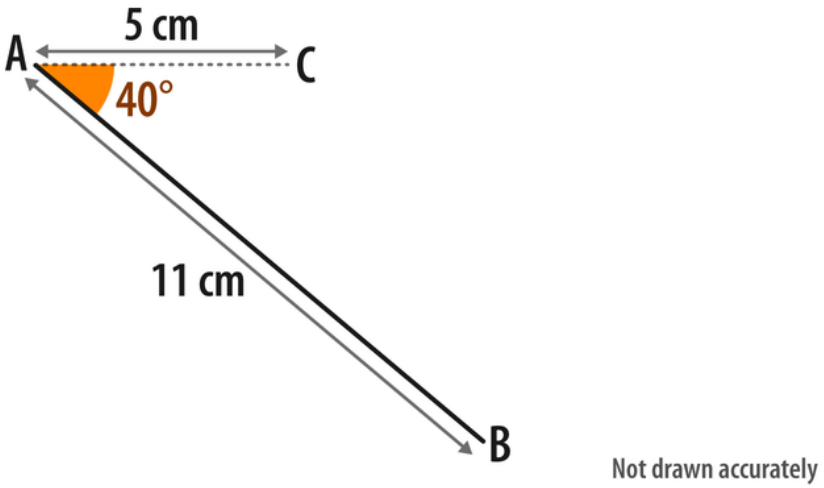
Use a ruler and a protractor to draw the diagram below.

Then, using only a ruler and a pair of compasses, construct the perpendicular from C to line AB. You must show all of your construction lines.

Measure the shortest distance from C to line AB in your drawing to 1 d.p.



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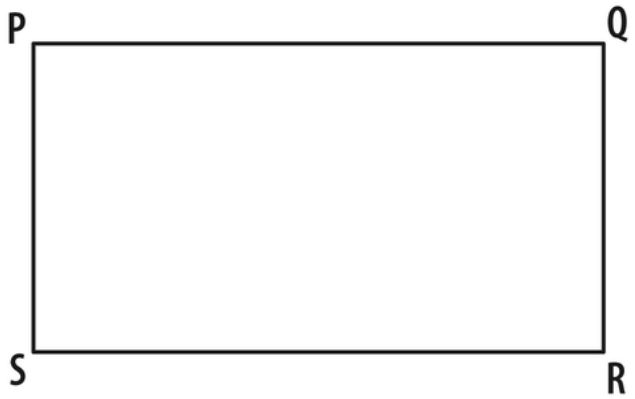
Constructing loci

B560

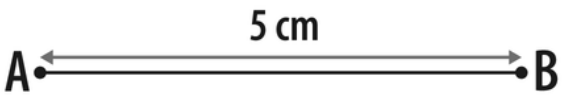
Copy and complete this sentence to describe the locus of points inside the rectangle $PQRS$ that are equidistant from PS and QR:

A line between the midpoints of PQ / PS / QR / RS and PQ / PS / QR / RS.



Draw the line segment AB in your book.

Construct the locus of points that are 2 cm away from AB.



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Mark the points A and B in your book 4 cm apart.

Construct and shade the region that is closer to B than to A and within 3 cm of B.
You must show all of your construction lines.

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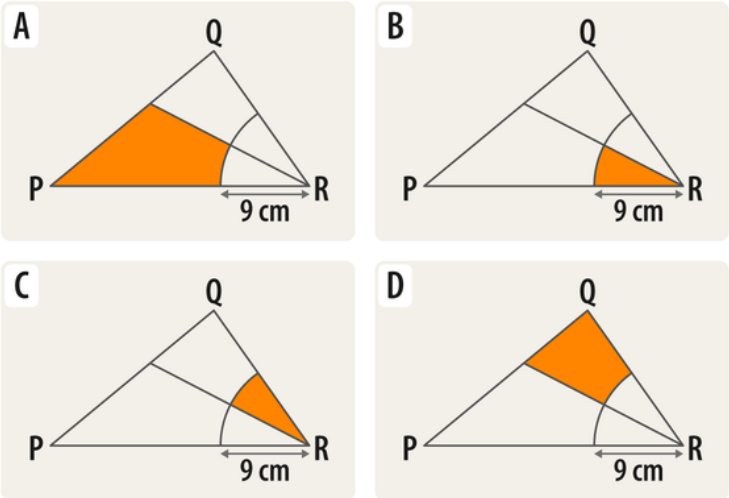
Which of these diagrams shows the locus of points within triangle PQR that are closer to QR than to PR and less than 9 cm from R?



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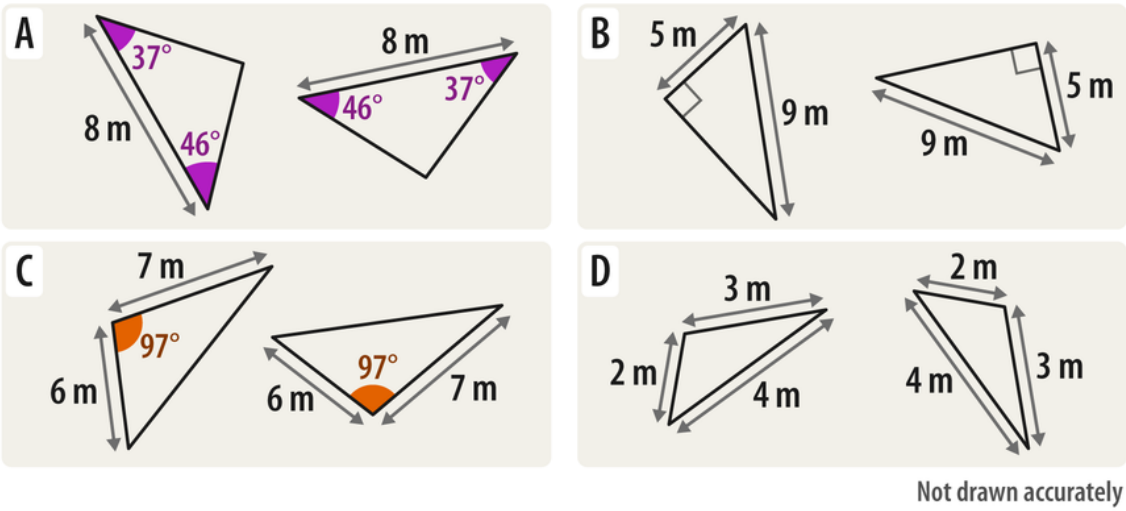
Angles and shapes - Congruent triangles

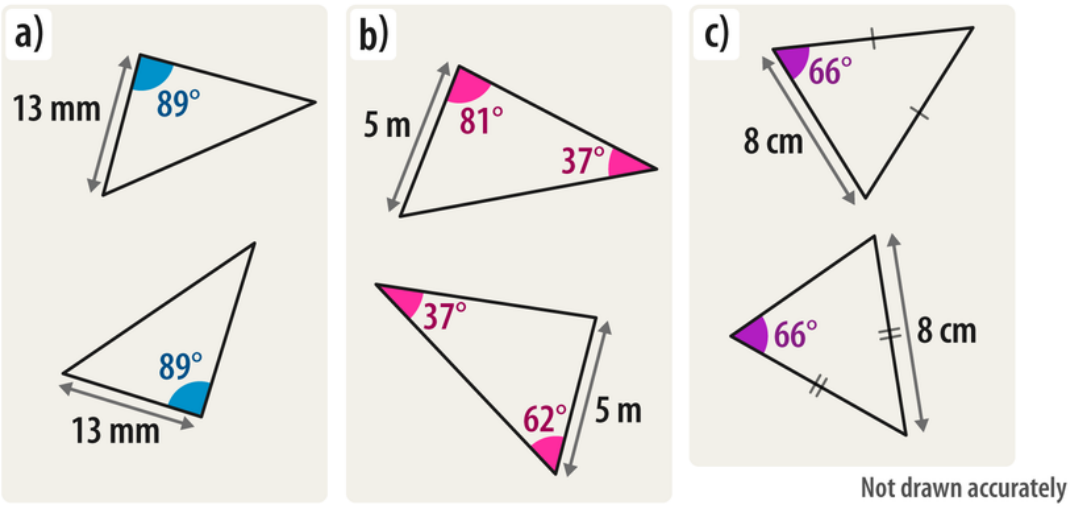
Congruent triangles B491

Match up each pair of triangles below with the condition that proves they are congruent.

SSS SAS ASA RHS



For each pair of triangles below, state whether the triangles are congruent, not congruent or if it is impossible to tell.



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Angles and shapes - Circle properties

Identifying parts of circles B713

Match each definition below with the part of a circle that it describes.

a)	A straight line between two points on the edge of a circle that goes through the centre of the circle	Circumference
b)	The distance around the edge of a circle	Radius
c)	A straight line from the centre of a circle to a point on the edge of the circle	Diameter

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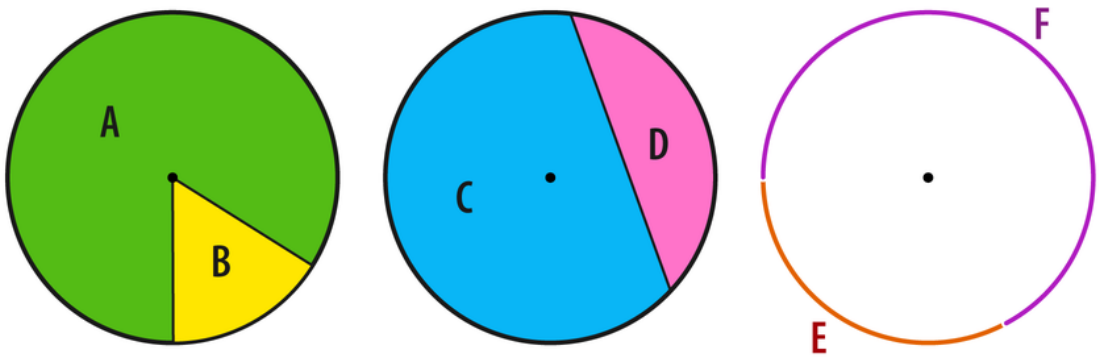
From the diagram below, choose the correct letter for each the following parts of a circle:

a) a major arc

b) a minor sector

c) a major segment



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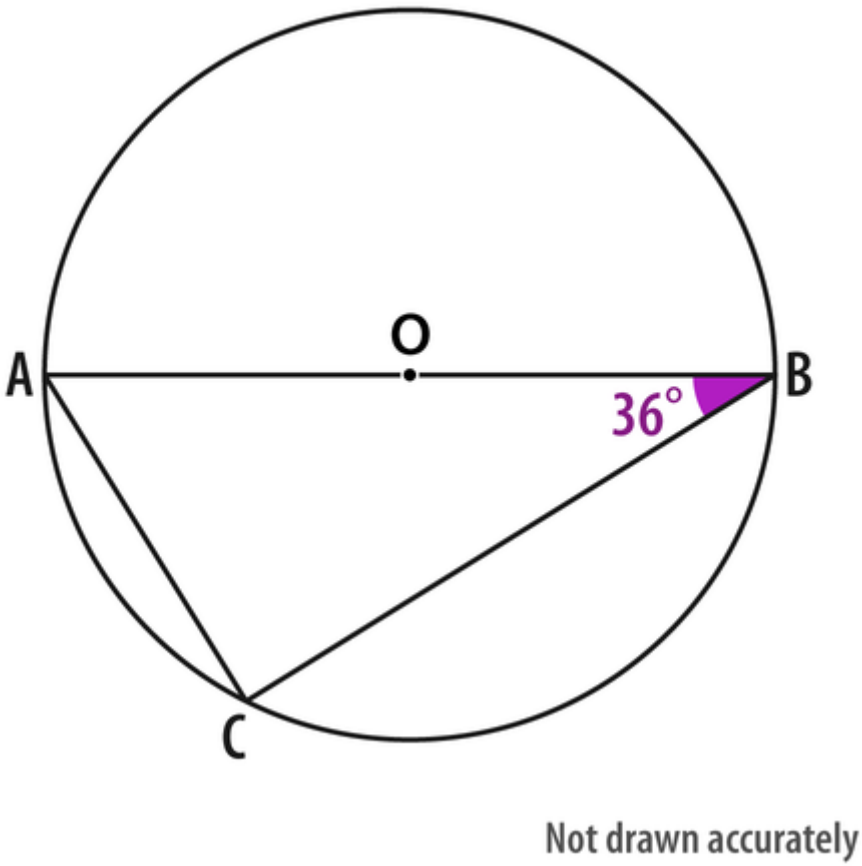
Applying circle theorems to find unknown angles **B482**

O is the centre of this circle.

Work out the size of angle CAB.
Give reasons for your answer.



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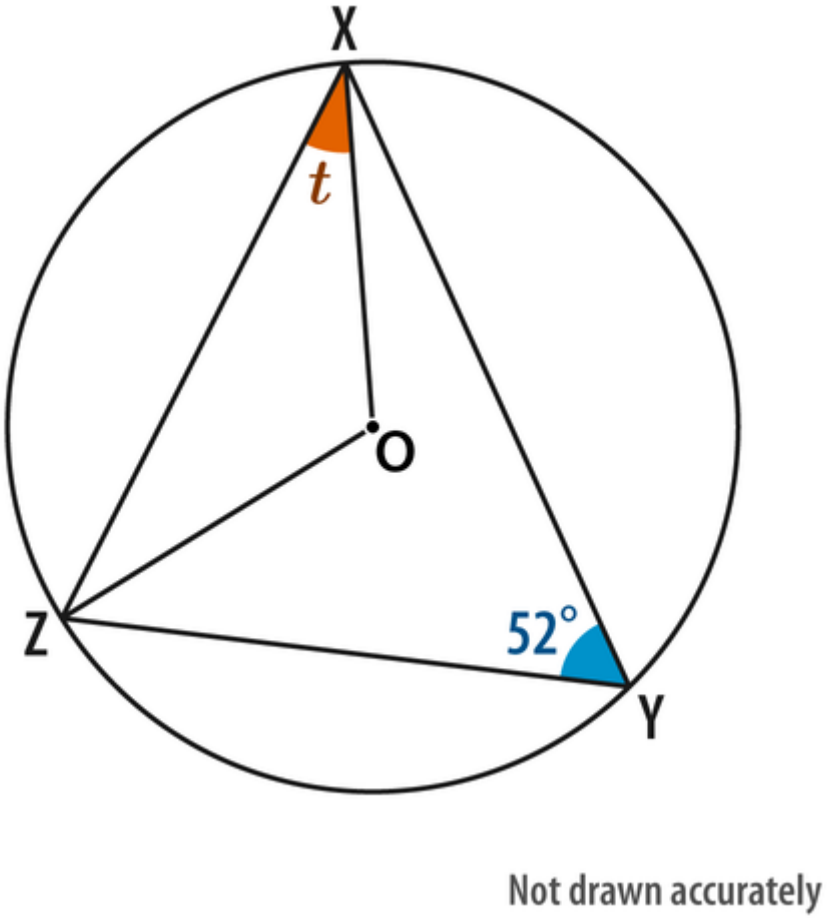
The circle below is centred at O.

Calculate the size of angle t.
Fully justify your answer.



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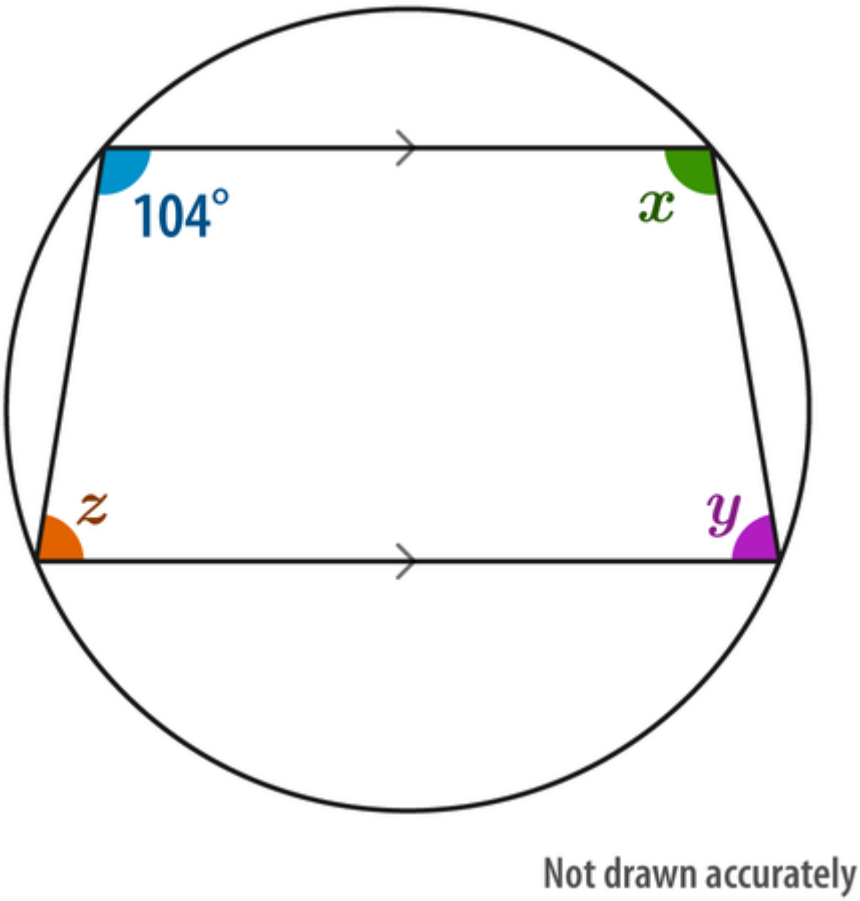
Find the sizes of angles x, y and z.

Give a reason for each of your answers.



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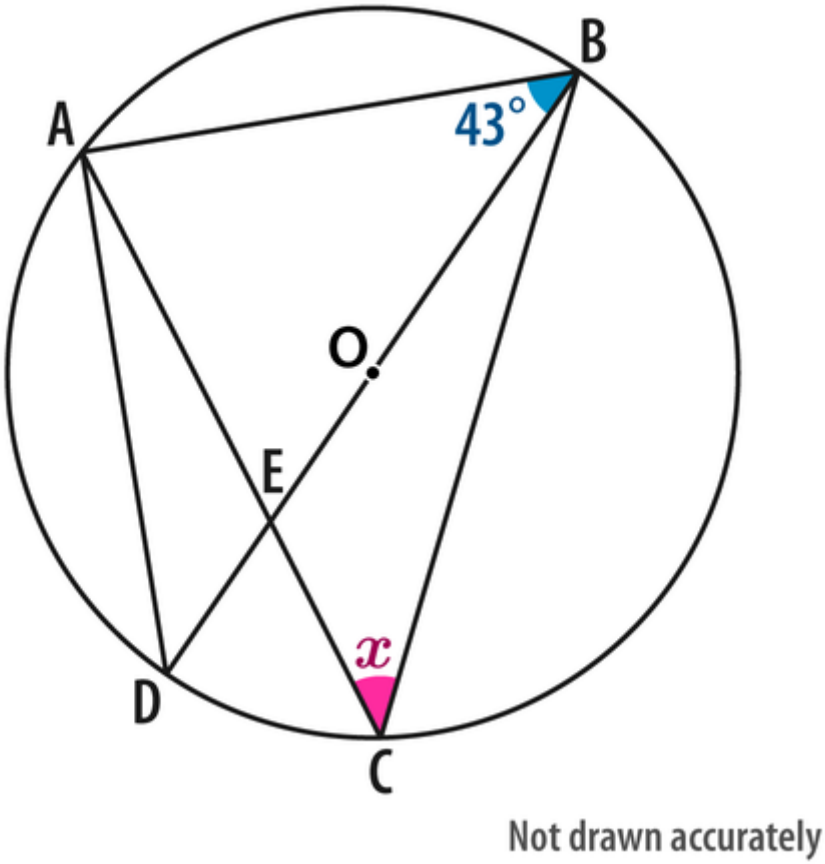
This circle is centred at O.

Find the size of angle x.
Justify your answer.



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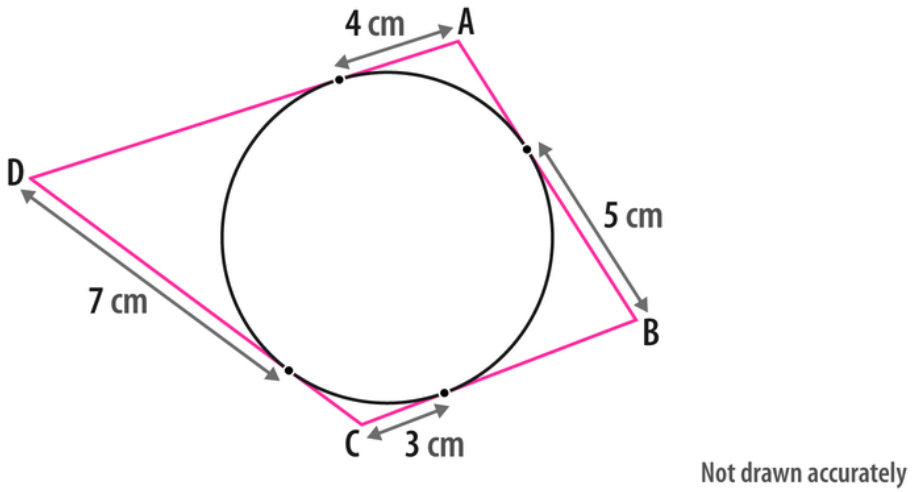
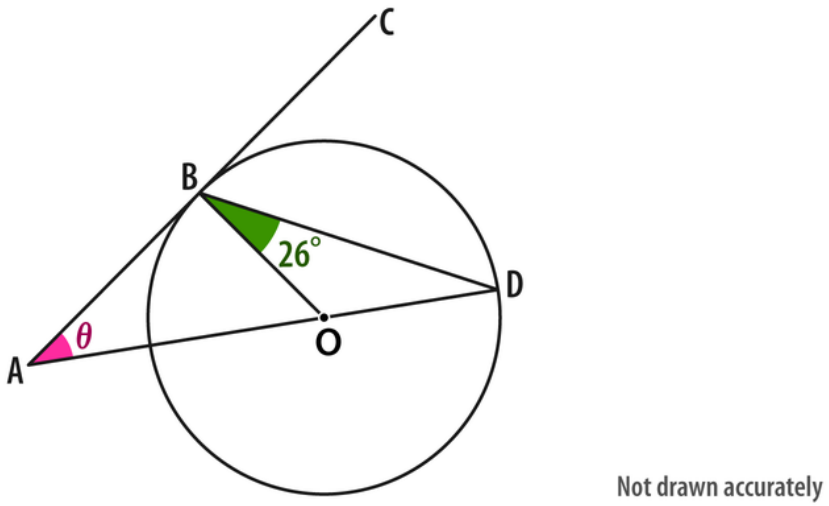
Calculate the perimeter of quadrilateral $ABCD$ below.
Justify your answer.



ABC is a tangent to the circle below.
O is the centre of the circle.

Work out the size of angle θ.
Give reasoning to justify your answer.



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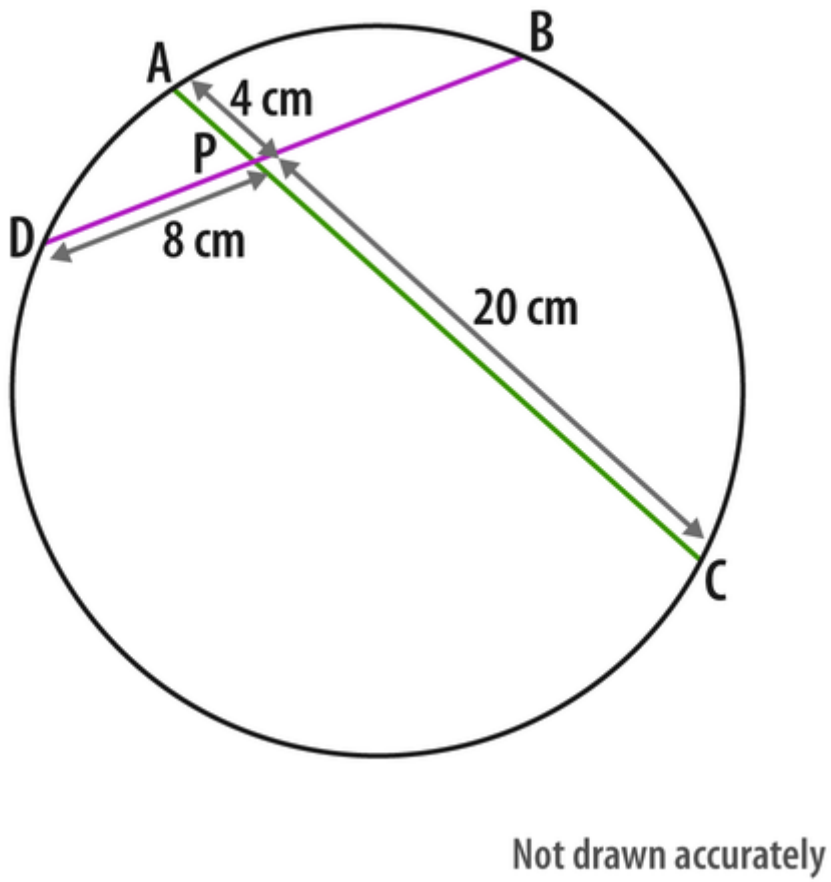
AC and BD are both chords in the circle below.

Work out the length of PB.
Fully justify your answer.



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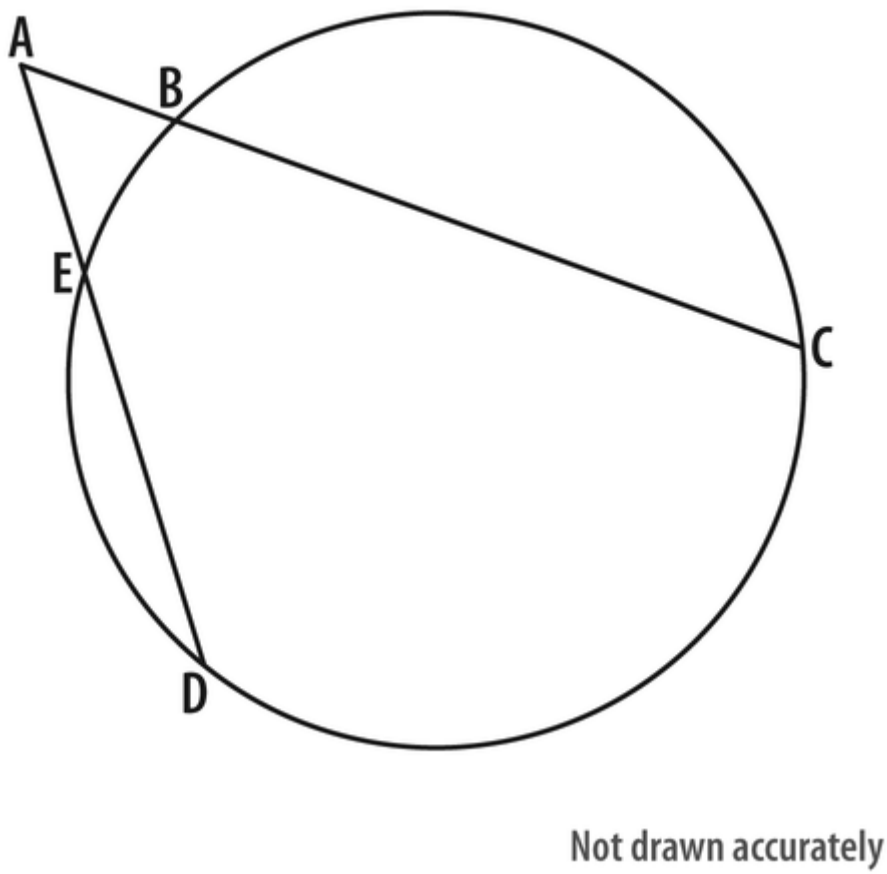
A circle is shown below.

$$\mathrm{AB} = 3\,\mathrm{mm}$$
$$\mathrm{BC} = 12\,\mathrm{mm}$$
$$\mathrm{AD} = 10\,\mathrm{mm}$$

Work out the length of AE, giving a reason for your answer.
If your answer is a decimal, give it to 1 d.p.



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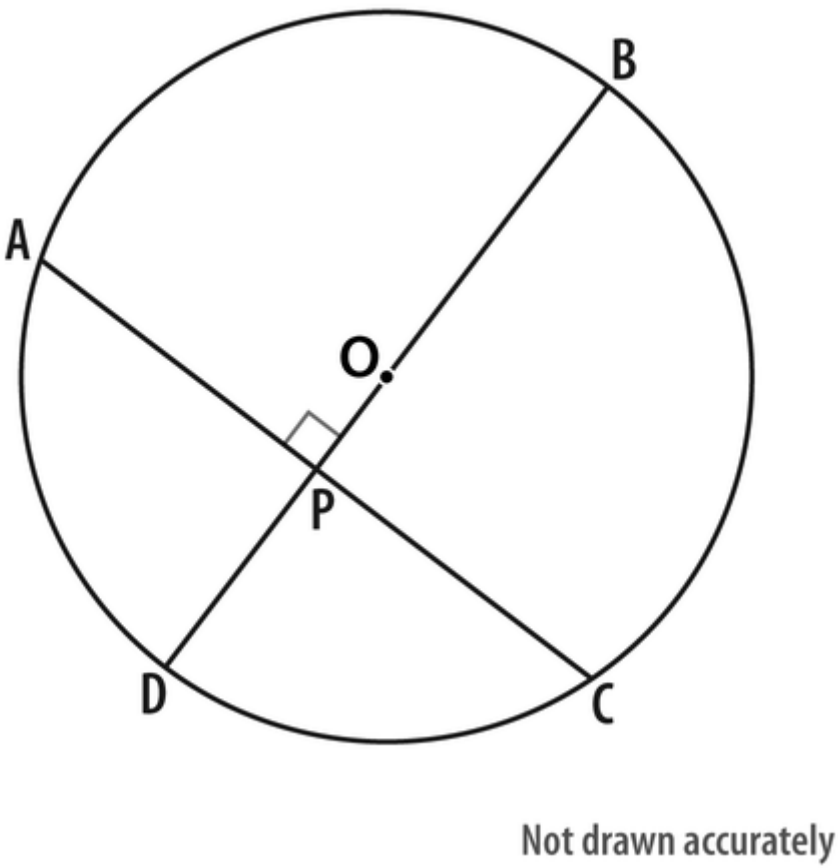
O is the centre of the circle below.

$AC = 14\,\text{cm}$ $PB = 10\,\text{cm}$

a) Work out the length of DP.

b) Hence work out the diameter of the circle.

Fully justify your answers.



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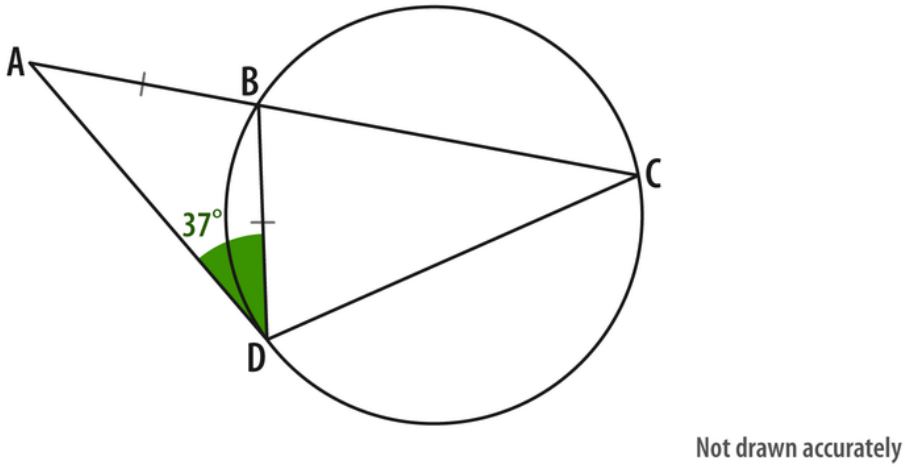
AD is a tangent to the circle below.

Work out the size of angle CDB.
Give reasons for your answer.



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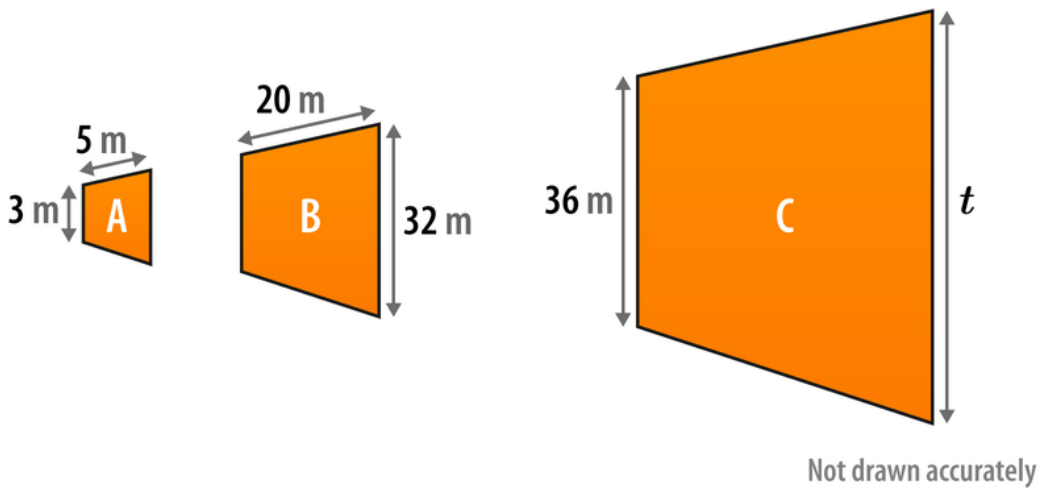
Angles and shapes - Similarity

Finding unknown sides in similar shapes B455

Quadrilaterals A, B and C are similar.

Work out the unknown length, t.
Give your answer as an integer or as a fraction in its simplest form.



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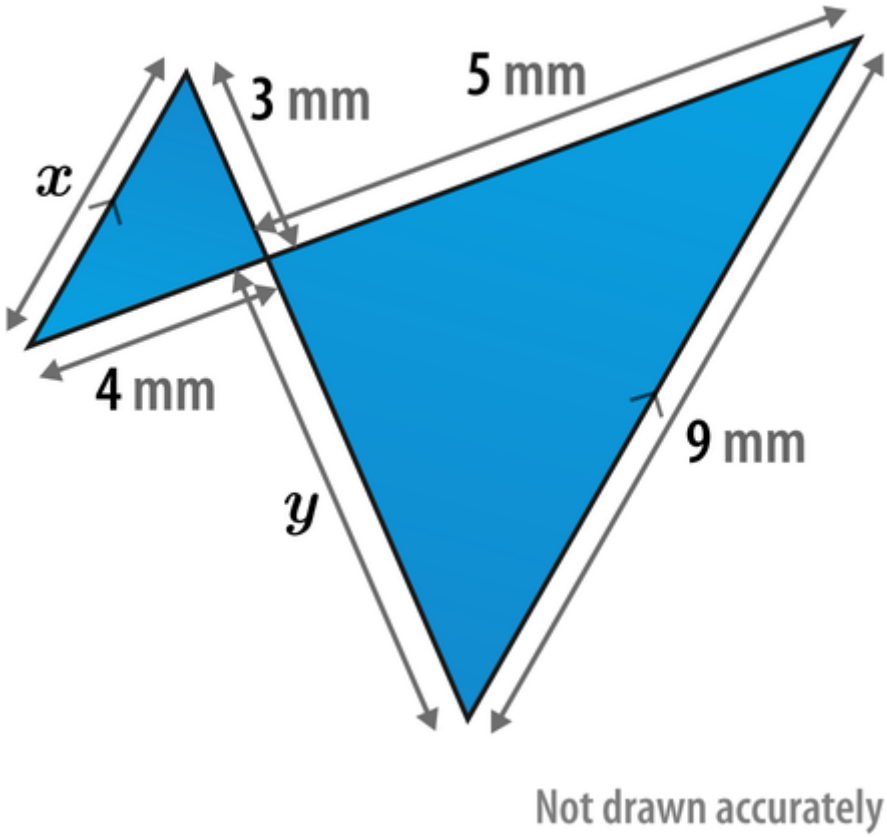
Work out the unknown lengths, x and y, in the shape below.
Give each answer as an integer or as a fraction in its simplest form.



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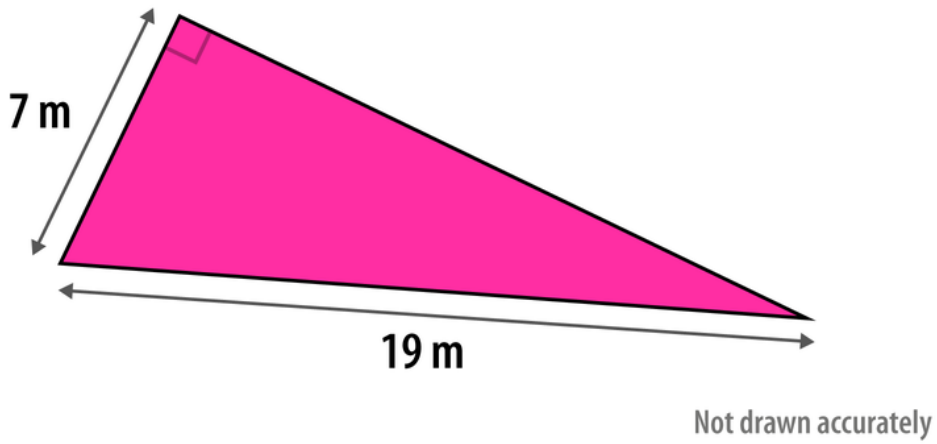
Pythagoras' Theorem - Pythagoras in 2-D

Using Pythagoras` theorem in 2D B251

Calculate the **perimeter** of this right-angled triangle.
Give your answer in metres (m) to 1 d.p.



At the start of the day, a decorator rested a $3\ \mathrm{m}$ ladder against a vertical wall so that the foot of the ladder was $60\ \mathrm{cm}$ away from the base of the wall.

During the day, the ladder slipped down the wall, causing the foot of the ladder to move $80\ \mathrm{cm}$ further away from the base of the wall.

How far down the wall, in centimetres, did the ladder slip?
Give your answer to the nearest $1\ \mathrm{cm}$.

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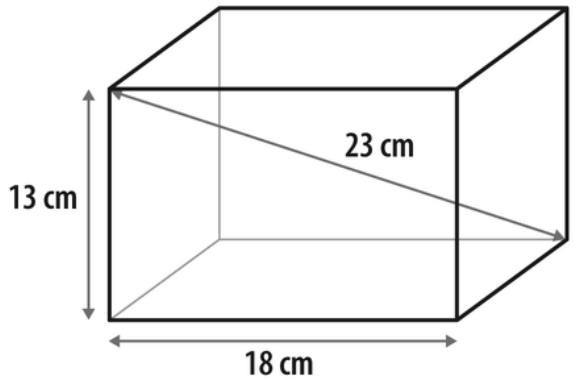
Pythagoras' Theorem - Pythagoras in 3-D

Using Pythagoras` theorem in 3D B286

Calculate the volume of the cuboid shown below.

Give your answer in cm^3.
If your answer is a decimal, then round it to 1 d.p.



Not drawn accurately

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