

ANGLES ON A LINE AND ABOUT A POINT

GRADE 2

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Examination practice questions

You should have:

A ruler, protractor, compasses, a pen, pencil, eraser, calculator.
For some questions, you may need tracing paper.

Instructions

- Use **black** ink or ball-point pen.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- **Calculators may be used.**

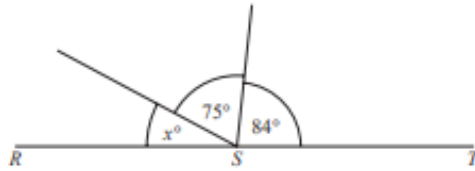
Information

- The marks for each question are shown in brackets.
- If the number of marks for two similar questions isn't the same, this is likely due to them being modelled on different specifications. In this case, it is worth considering both mark schemes.
- Use the number of marks for each question as a guide as to how much time to spend on each question. As a rough guide, you can multiply the number of marks by 1.2 to see how many minutes you should spend on a question.
- Questions will generally get more challenging as the document progresses. Some of the latter questions will go beyond the core grade level for this topic.

Advice

- Read each question carefully before you start to answer it.
- Don't forget to have fun.
- Check your answers at the end.

Q1.



RST is a straight line.

Work out the value of x .

$$180 - 75 - 84 =$$

M,

A,

21

(2 marks)

Q2.

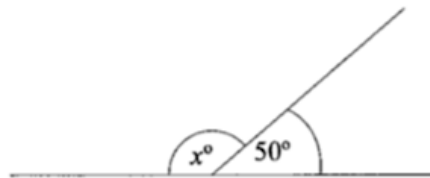


Diagram NOT accurately drawn

Work out the size of the angle marked x° .

$$180 - 50 =$$

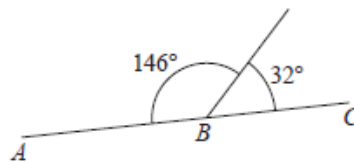
M,

A,

130

(2 marks)

Q3.



Tom says,

"ABC cannot be a straight line."

M,

Is Tom correct?

$$146 + 32 = 178$$

A,

Yes

(2 marks)

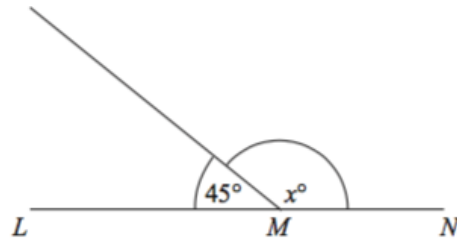


Diagram NOT accurately drawn

LMN is a straight line.
Work out the value of x .

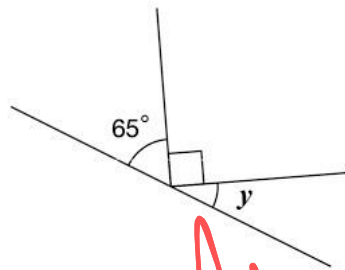
$$180 - 45 =$$

M.

A.

135°

(2 marks)



Not to scale

Calculate the size of angle y in this diagram.

$$180 - 90 - 65 = 25$$

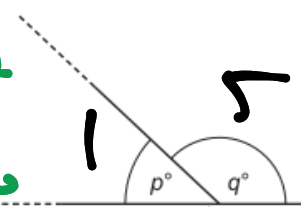
M.

A.

25°

(2 marks)

NB You could use ratios to help with this question.



Not to scale

It is given that $q = 5p$. Find the value of q .

$$1 + 5 = 180 \quad p = 30$$

$$180 / 6 = 30 \quad q = 150$$

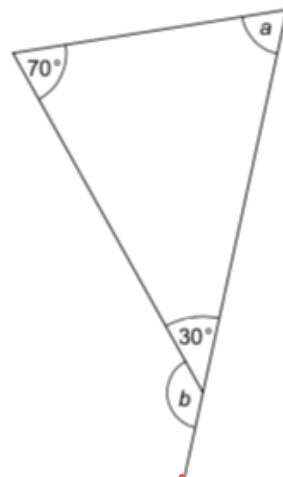
M.

A.

150°

(2 marks)

Here is a diagram.



Not to scale

Work out angle *b*.

$$180 - 30 =$$

A1

$$\underline{150^\circ}$$

(2 marks)

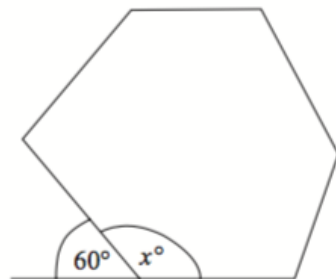


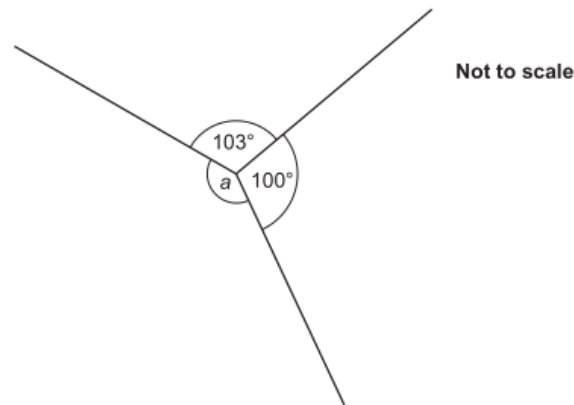
Diagram NOT accurately drawn

Give a reason in words for why $x = 120^\circ$

Angles on a straight line
add to 180°

B1 Reference to a straight line (2 marks)
B1 Correct explanation

Three lines meet at a point.



Work out the size of angle a .

A,
157°

$$360 - 103 - 100 =$$

M,

(2 marks)

PO , RO , SO and TO are four straight lines.

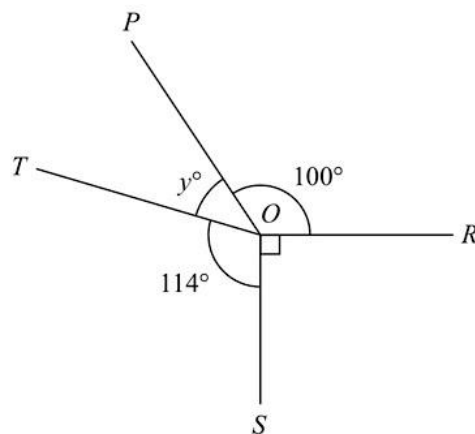


Diagram **NOT** accurately drawn

Work out the value of y

$$360 - 90 - 100 - 114 =$$

M,

A,
56°

(2 marks)

Q11.

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Jenna measures all the angles around a point.

Her results are 23° , 145° , 23° and 69°

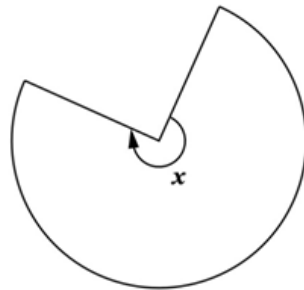
Explain why these results cannot be true.

$23 + 145 + 23 + 69 = 260$
The angles do not add to 360° .

(1 mark)

Q12.

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This shape is **three-quarters of a circle**. How many degrees is angle x ?

$3/4$ of $360 = 270$
M.

A.
 270°

(2 marks)

Q13.

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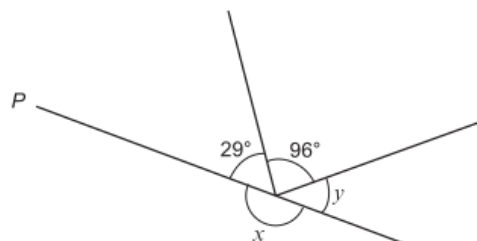


Diagram not drawn to scale

PS is a straight line. Find the size of angle y .

$360 - 29 - 96 - 180 =$
M.

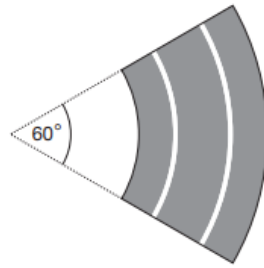
x is 180°

55°

(2 marks)

A.

A curved piece of track looks like this:



How many of these curved pieces are needed to make a **complete circle** of track?

$$\frac{360}{60} = 6$$

M1

A1
6

(2 marks)

Work out the size of angle q .

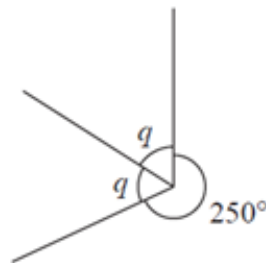


Diagram NOT
accurately drawn

$$360 - 250 = 110$$

A1
55°

$$2q = 110$$

$$\frac{110}{2} = 55$$

M1 for demonstration of understanding that
 $2q + 110 = 360$.

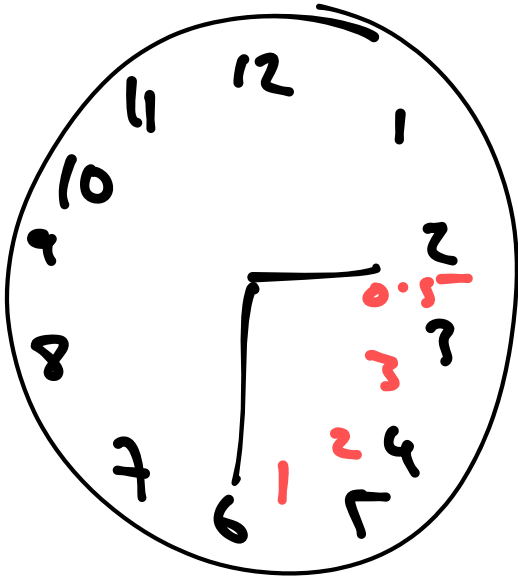
(2 marks)

QUESTIONS FROM MATHEMATICAL COMPETITIONS

Q16.

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What is the angle between the hands of a clock at half past two?



Angle between each number is

$$\frac{360}{12} = 30^\circ$$

At 2:30, the hour hand is halfway between 2 and 3.

$$3.5 \times 30^\circ = \underline{\underline{105^\circ}}$$