JustMaths

Similarity (F)

A collection of 9-1 Maths GCSE Sample and Specimen questions from AQA, OCR, Pearson-Edexcel and WJEC Eduqas.

Name:	SOLUTIONS
Total Marks:	

1. The areas of two rectangles A and B are in the ratio 1 : 3 respectively.

   Rectangle A measures 4m by 3m.

(a) (i) Give a possible pair of values for the length and width of rectangle B.

Area A = $4 \times 3 = 12m^2$ so Area B = $12 \times 3 = 36m^2$

Possible lengths/widths:
1, 36 3, 12
2, 18 4, 9

Length = ..18.. Width = ..2.. [3]

(ii) Give a different possible pair of values for the length and width of rectangle B.

Length = ..9.. Width = ..4.. [1]

(b) Are the two rectangles you have identified in part (a) similar?

You must give a reason for your answer.

NO - corresponding dimensions do not have same scale factor. [1]

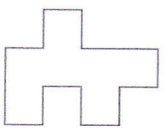
2. Which shape is congruent to shape X?

Circle the correct letter. [1]

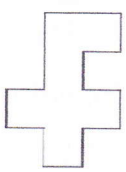
identical

X

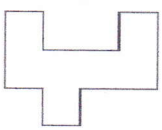
A



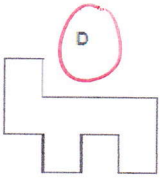
B



C



D

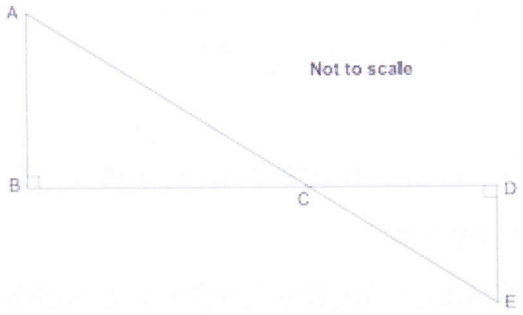


3. Which of these is not used to prove that triangles are congruent?

   Circle your answer.

   SSS SAS AAA RHS

4. In the diagram below, AE and BD are straight lines.



(a) Show that triangles ABC and EDC are similar.

$\angle ABC = \angle CDE = 90°$ (shown in diagram)
$\angle ACB = \angle DCE$ (vertically opposite angles are equal)
$\therefore \angle BAC = \angle DEC$ AAA = similar. [3]

(b) The length DE is 3.5 m.

The ratio BC : CD = 3 : 1.

Find the length AB.

If BC : CD = 3 : 1 then AB : DE = 3 : 1 (similar triangles)

$3.5 \times 3 = 10.5$ m

..... 10.5 ..... m [2]

5. The smallest angle of a triangle is 25°

The triangle is enlarged by scale factor 3

Ben says,

"The smallest angle of the enlarged triangle is 75° because 25 × 3 = 75"

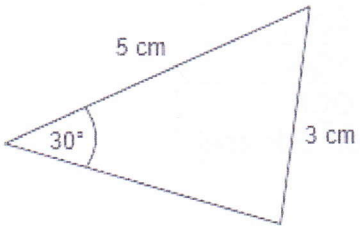
Is Ben right?

Explain your answer.

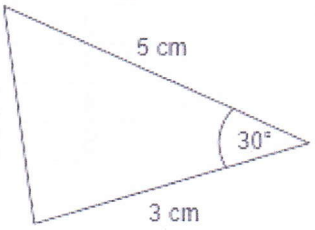
No - angles are unaffected by an enlargement. [1]

6. Here are four triangles.

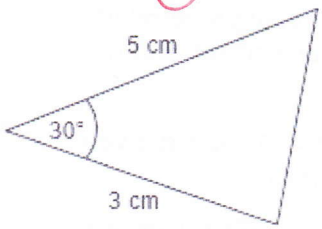
A



B

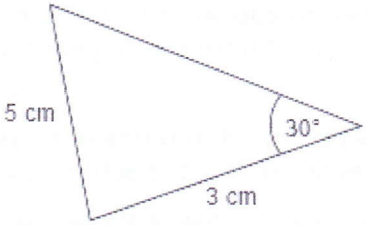


C



D

Not drawn accurately



a) Which two triangles are congruent? Circle your answers.

A B C D

[1]

b) Circle the reason for your answer to part (a).

SSS ASA SAS RHS

[1]

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CREDITS AND NOTES

Question	Awarding Body
1	WJEC Eduqas
2	AQA
3	AQA
4	OCR
5	Pearson Edexcel

Notes:

These questions have been retyped from the original sample/specimen assessment materials and whilst every effort has been made to ensure there are no errors, any that do appear are mine and not the exam board s (similarly any errors I have corrected from the originals are also my corrections and not theirs!).

Please also note that the layout in terms of fonts, answer lines and space given to each question does not reflect the actual papers to save space.

These questions have been collated by me as the basis for a GCSE working party set up by the GLOW maths hub - if you want to get involved please get in touch. The objective is to provide support to fellow teachers and to give you a flavour of how different topics "could" be examined. They should not be used to form a decision as to which board to use. There is no guarantee that a topic will or won't appear in the "live" papers from a specific exam board or that examination of a topic will be as shown in these questions.

Links:

AQA http://www.aqa.org.uk/subjects/mathematics/gcse/mathematics-8300

OCR http://ocr.org.uk/gcsemaths

Pearson Edexcel http://qualifications.pearson.com/en/qualifications/edexcel-gcses/mathematics-2015.html

WJEC Eduqas http://www.eduqas.co.uk/qualifications/mathematics/gcse/

Contents:

This version contains questions from:

AQA – Sample Assessment Material, Practice set 1 and Practice set 2

OCR – Sample Assessment Material and Practice set 1

Pearson Edexcel – Sample Assessment Material, Specimen set 1 and Specimen set 2

WJEC Eduqas – Sample Assessment Material