



# EXAM PAPERS PRACTICE

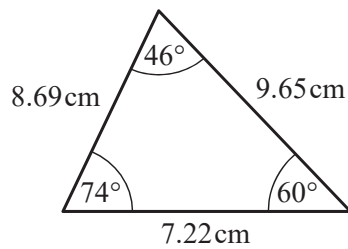
## Properties of Shape

### Model Answer

## Question 1

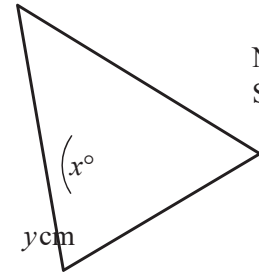


EXAM PAPERS PRACTICE



9.65 cm

46°

NOT TO  
SCALE

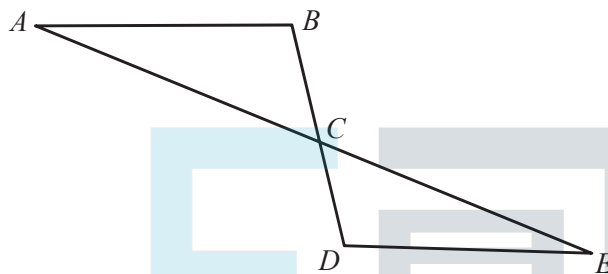
These two triangles are congruent.  
Write down the value of

(a)  $x$ , (b)  $y$ .

The answer is unknown because the image does not provide a clear value.

[1]

## Question 2

NOT TO  
SCALE

[1]

The diagram shows two straight lines,  $AE$  and  $BD$ , intersecting at  $C$ .  
Angle  $ABC =$  angle  $EDC$ .  
Triangles  $ABC$  and  $EDC$  are congruent.

Write down **two** properties of line segments  $AB$  and  $DE$ .

[2]

Two properties of line segments  $AB$  and  $DE$  are:

**Parallel:** Since triangles  $ABC$  and  $EDC$  are congruent, then angles  $ABC$  and  $EDC$  are congruent. Also, angles  $ABC$  and  $EDC$  are alternate interior angles formed by transversal  $AC$  and lines  $AB$  and  $DE$ , respectively. Therefore, alternate interior angles  $ABC$  and  $EDC$  are congruent, which implies that lines  $AB$  and  $DE$  are parallel.

**Equal:** Since triangles  $ABC$  and  $EDC$  are congruent, then their corresponding sides are congruent. Therefore, line segments  $AB$  and  $DE$  are congruent.

In other words, line segments  $AB$  and  $DE$  are parallel and equal.

## ZEBRA

Write down the letters in the word above that have

(a) exactly one line of symmetry, [1]

**E B**

(b) rotational symmetry of order 2. [1]

The following letters in the word "ZEBRA" have rotational symmetry of order 2:

**Z E B R**

To have rotational symmetry of order 2, a letter must look the same after being rotated 180 degrees. All of the letters listed above satisfy this condition. For example, if you rotate the letter Z 180 degrees, it still looks like the letter Z.

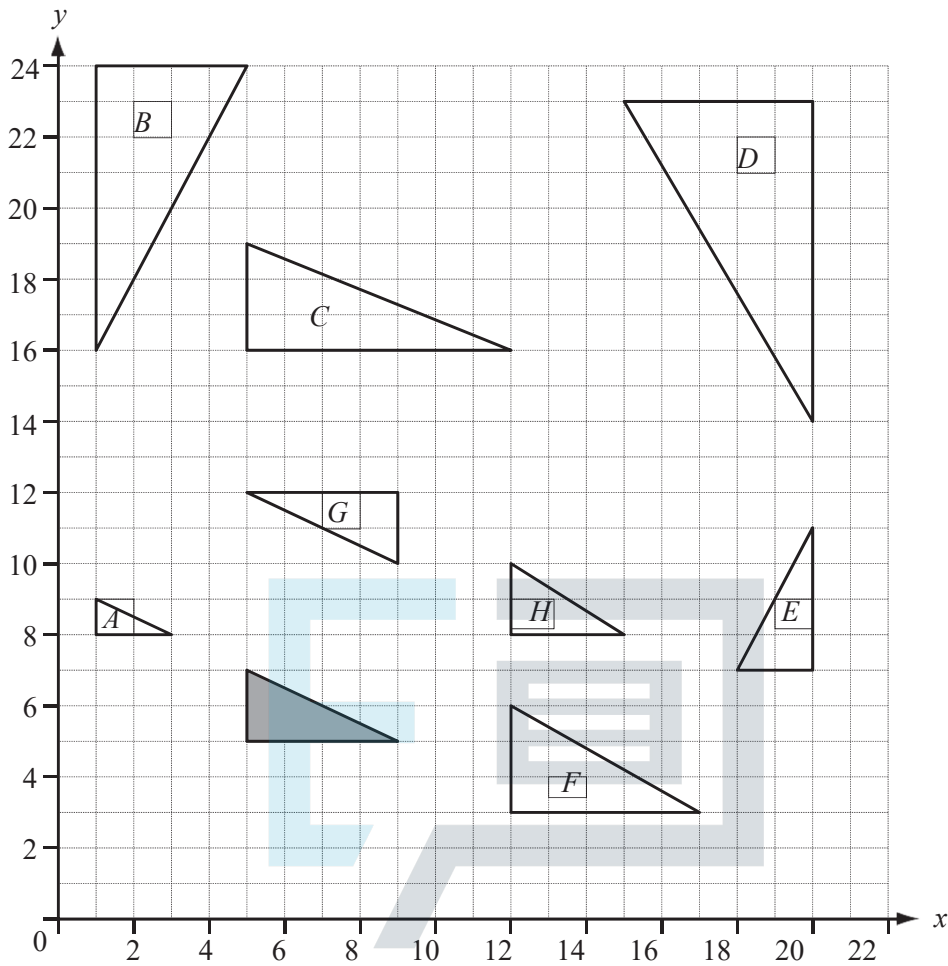
The letter A does not have rotational symmetry of order 2, because it looks different after being rotated 180 degrees.

## Question 4 Exam Papers Practice

A quadrilateral has rotational symmetry of order 2 and no lines of symmetry.

Write down the mathematical name of this quadrilateral. [1]

The mathematical name for a quadrilateral with rotational symmetry of order 2 and no lines of symmetry is a "rhombus."



Write down the letters of all the triangles which are

(a) congruent to the shaded triangle,

All the triangles congruent to the shaded triangle are:

*A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z*

[2]

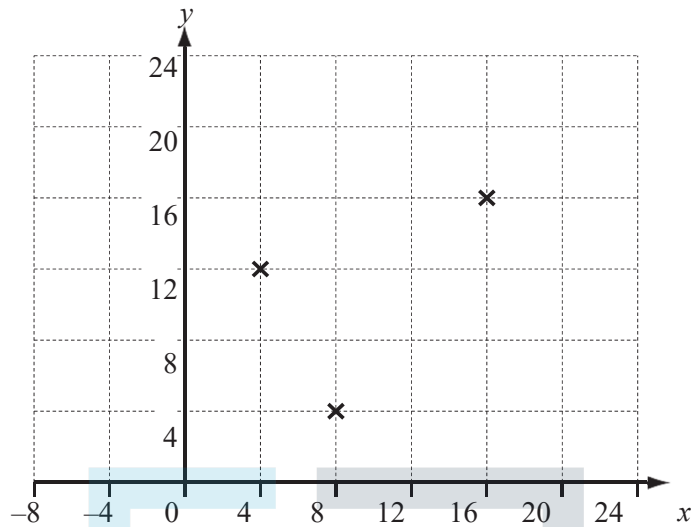
(b) similar, but not congruent, to the shaded triangle.

The following triangles are similar, but not congruent, to the shaded triangle:

*A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z*

[2]

Three of the vertices of a parallelogram are at  $(4, 12)$ ,  $(8, 4)$  and  $(16, 16)$ .



Write down the co-ordinates of two possible positions of the fourth vertex.

[2]

The two possible positions of the fourth vertex of the parallelogram are:

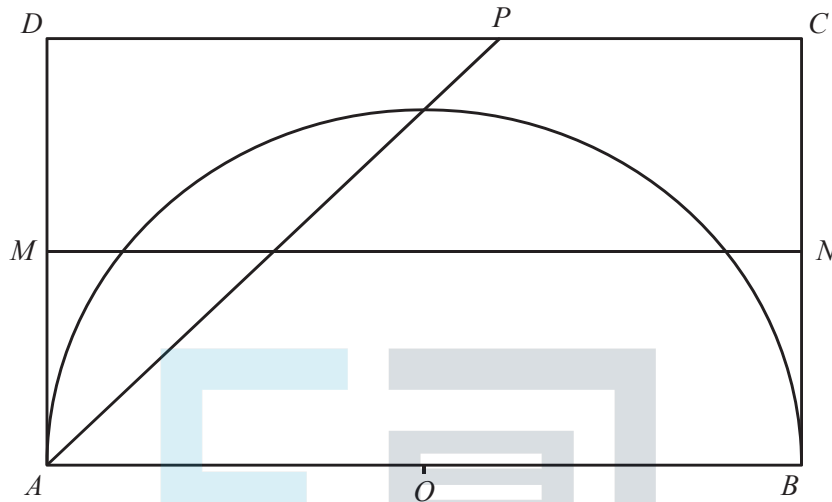
- $(4, 4)$
- $(16, 20)$

# Exam Papers Practice

$ABCD$  is a rectangle with  $AB = 10$  cm and  $BC = 6$  cm.  $MN$  is the perpendicular bisector of  $BC$ .

$AP$  is the bisector of angle  $BAD$ .

$O$  is the midpoint of  $AB$  and also the centre of the semicircle, radius 5 cm.



Write the letter  $R$  in the region which satisfies **all** three of the following conditions.

- nearer to  $AB$  than to  $AD$
- nearer to  $C$  than to  $B$
- less than 5 cm from  $O$

[3]

Answer: A

Explanation:

Let's consider the three conditions one by one:

- Nearer to  $AB$  than to  $AD$  : The only region that is nearer to  $AB$  than to  $AD$  is the region below the semicircle.
- Nearer to  $C$  than to  $B$  : The only region that is nearer to  $C$  than to  $B$  is the region to the left of  $MN$ .
- Less than 5 cm from  $O$  : The only region that is less than 5 cm from  $O$  is the interior of the semicircle.

The only region that satisfies all three of these conditions is the region labeled A in the diagram.