St. Mary's Catholic High School, Muhaisnah

Introduction to enlargement

LO: **enlarge a shape on a grid when given a scale factor and center of enlargement.**

Success Criteria

I can scale a shape on a grid (without a centre specified);

I can understand that an enlargement is specified by a centre and a scale factor

I can understand that an enlargement is specified by a centre and a fractional scale factor

Introduction to Enlargement

LO: enlarge a shape on a grid when given a scale factor and center of enlargement

KEYWORDS:

Transformation, enlargement, scale factor, centre of enlargement, similarity, congruent

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Transformation, enlargement, scale factor, centre of enlargement, similarity, congruent

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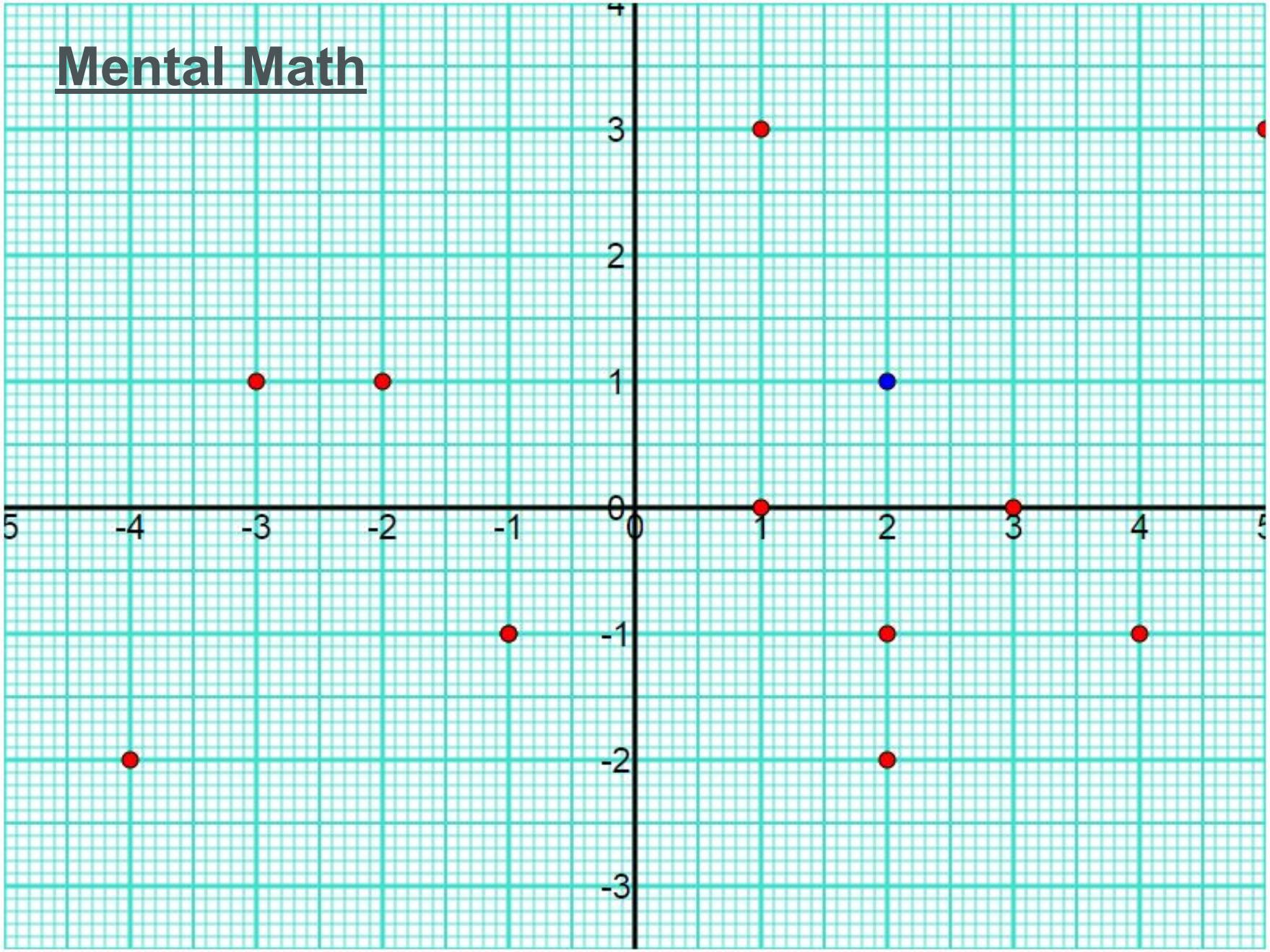
The blue point is exactly in the middle of two red points. What are their coordinates?

Mental Math



a grid when given
er of enlargement.

03:00

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GCSE/iGCSE Assessment Objective Specification - Foundation

Introduction to enlargement

rid when given a scale factor and center of enlargement.

SPECIFICATION REFERENCES

R6	express a multiplicative relationship between two quantities as a ratio or a fraction
R12	… make links to similarity … and scale factors
G1	use conventional terms and notations: points, lines, vertices, edges, planes, parallel lines, perpendicular lines, right angles, polygons, regular polygons and polygons with reflection and/or rotation symmetries; …
G7	identify, describe and construct congruent and similar shapes, including on coordinate axes, by considering rotation, reflection, translation and enlargement (including fractional scale factors)
G24	describe translations as 2D vectors

GCSE/iGCSE Assessment Objective Specification- Higher

SPECIFICATION REFERENCES

R2	use scale factors, scale diagrams and maps
R6	express a multiplicative relationship between two quantities as a ratio or a fraction
G7	identify, describe and construct congruent and similar shapes, including on a coordinate axis, by considering rotation, reflection, translation and enlargement (including fractional **and negative** scale factors)
G8	**describe the changes and invariance achieved by combinations of rotations, reflections and translations**

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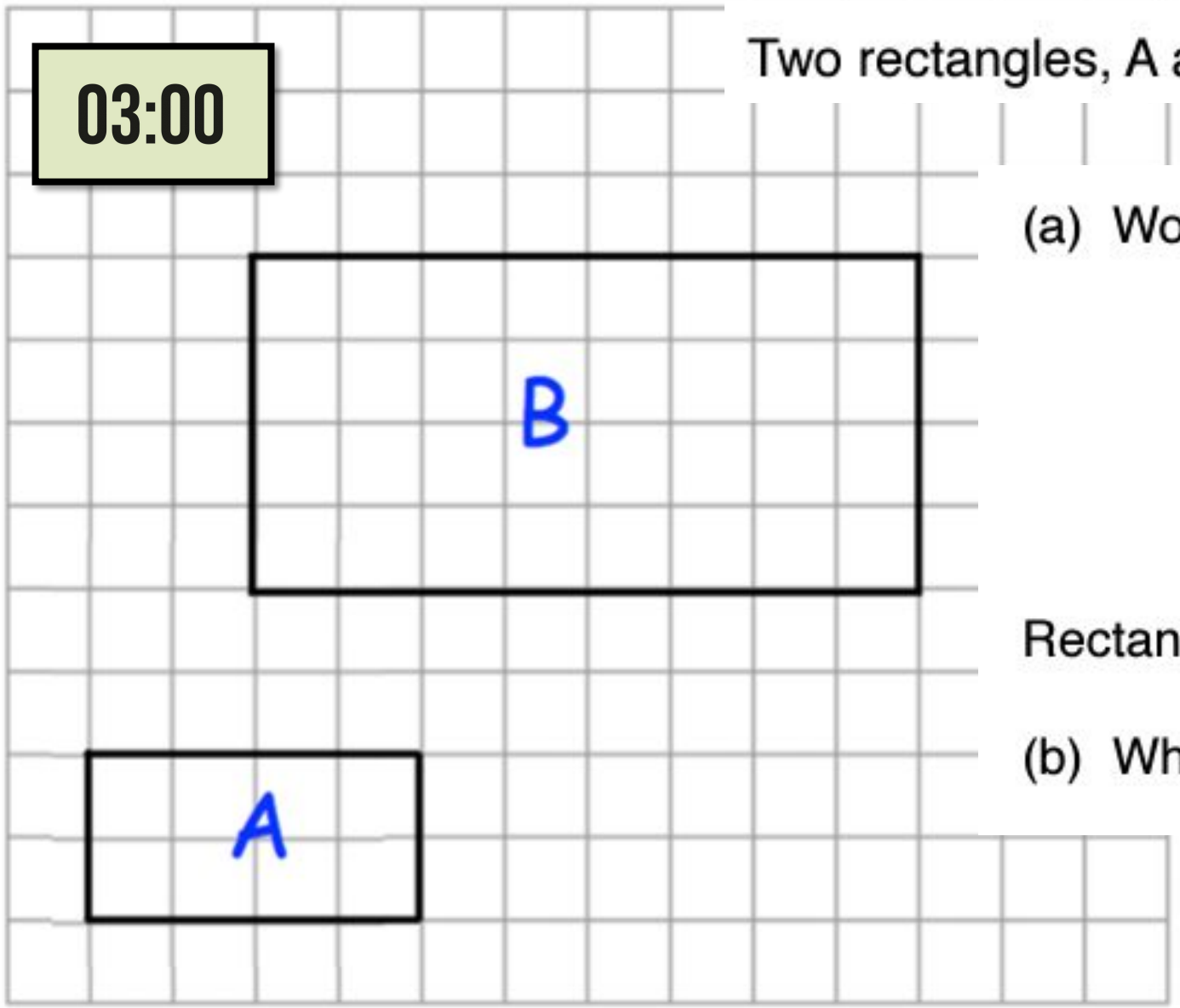
Introduction to enlargement

LO: **enlarge a shape on a grid when given a scale factor and center of enlargement.**

03:00



Two rectangles, A and B, are drawn on a centimetre grid.

(a) Work out the area of rectangle A.

Rectangle B is an enlargement of rectangle A.

(b) What is the scale factor of the enlargement?

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Introduction to enlargement

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Answers

(a) Work out the area of rectangle A.

$2 \times 4 = 8$

..... 8 ..... cm^2 (1)

Rectangle B is an enlargement of rectangle A.

(b) What is the scale factor of the enlargement?

2

..... (1)

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Introduction to enlargement

LO: **enlarge a shape on a grid when given a scale factor and center of enlargement.**

Enlargement is a type of transformation.

An enlargement changes the size of an object. The shape stays exactly the same but the size changes.

Enlargements are described using two pieces of information:

- Scale factor – the size of the enlargement- *We are going to talk about this today*
- Centre of enlargement – the position from which the shape is enlarged

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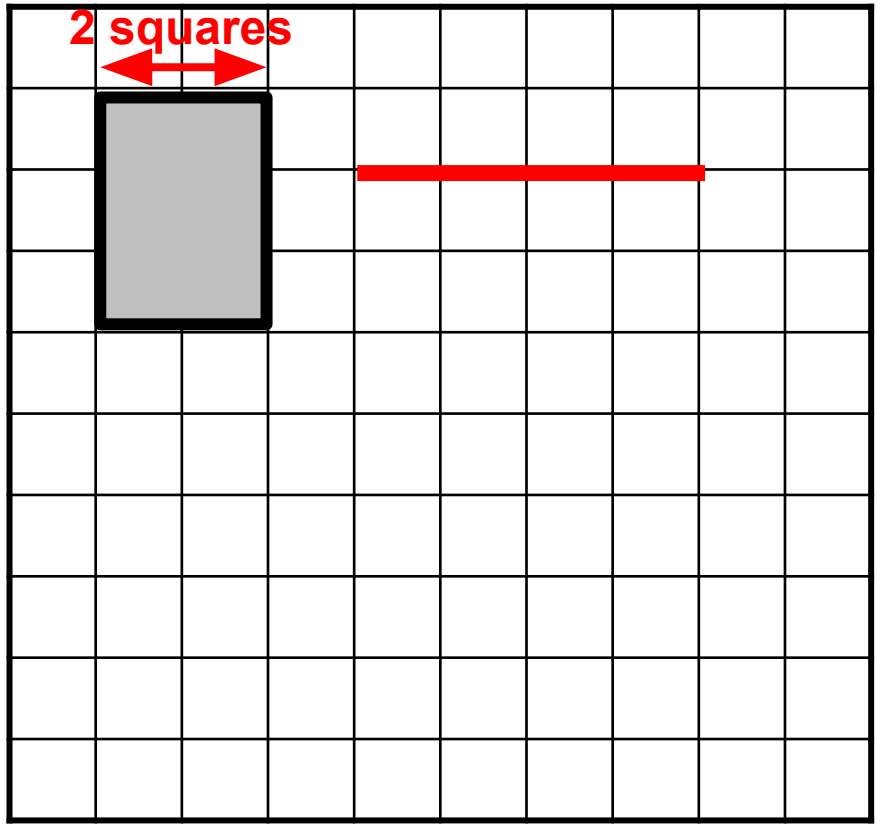
MY TURN

LO: enlarge a shape on a grid when given a scale factor and center of enlargement.

Enlarge this object by scale factor 2.



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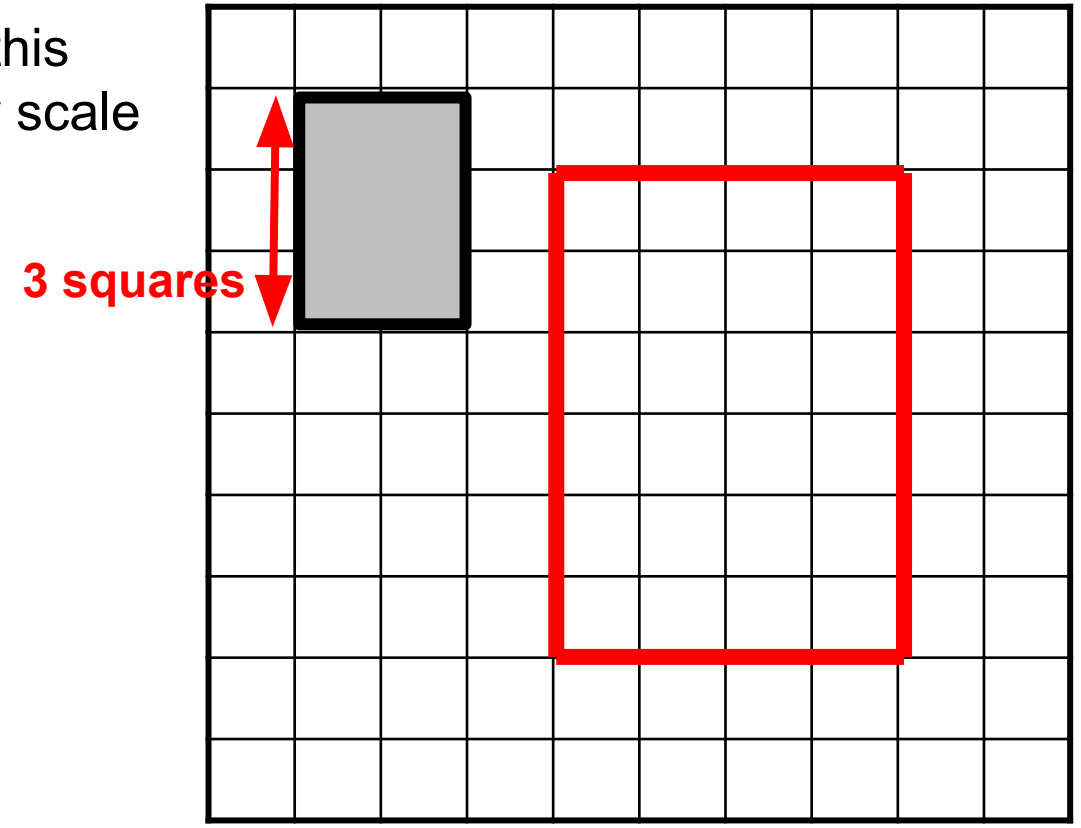
MY TURN

LO: enlarge a shape on a grid when given a scale factor and center of enlargement.

Enlarge this object by scale factor 2.



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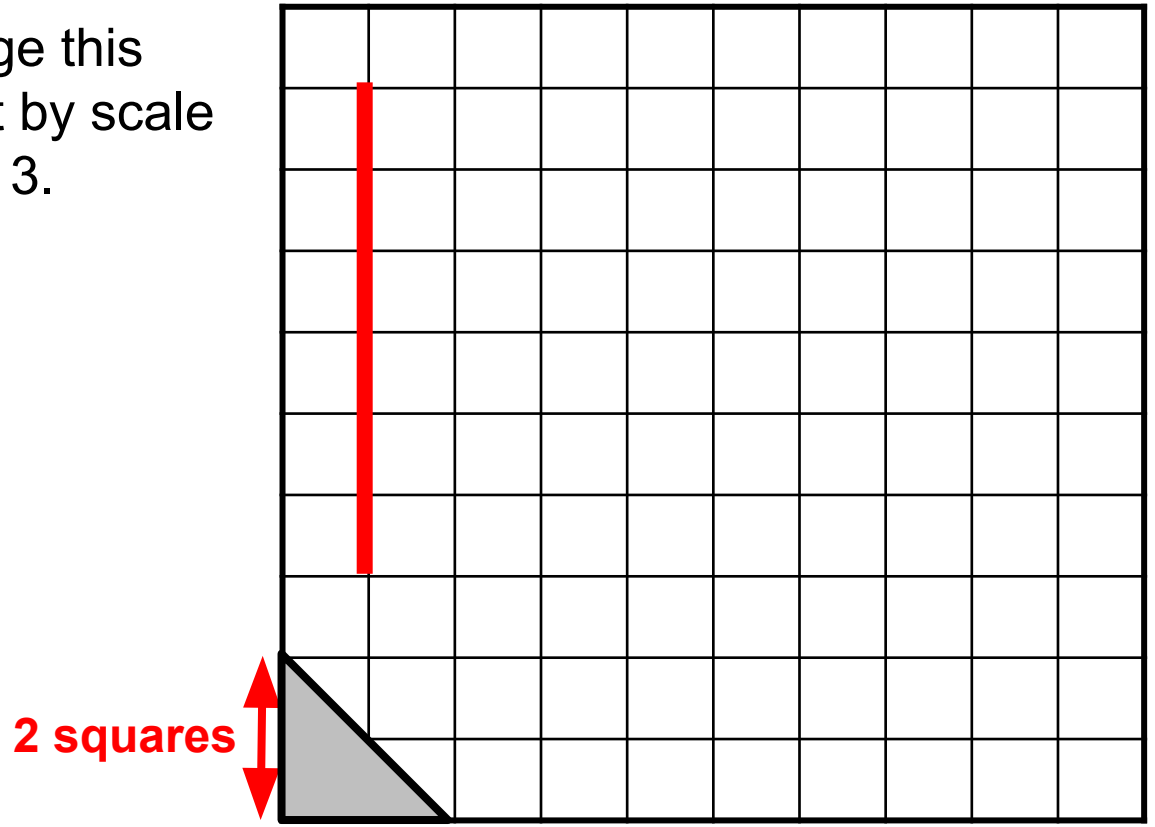
YOUR TURN

LO: enlarge a shape on a grid when given a scale factor and center of enlargement.

Enlarge this object by scale factor 3.



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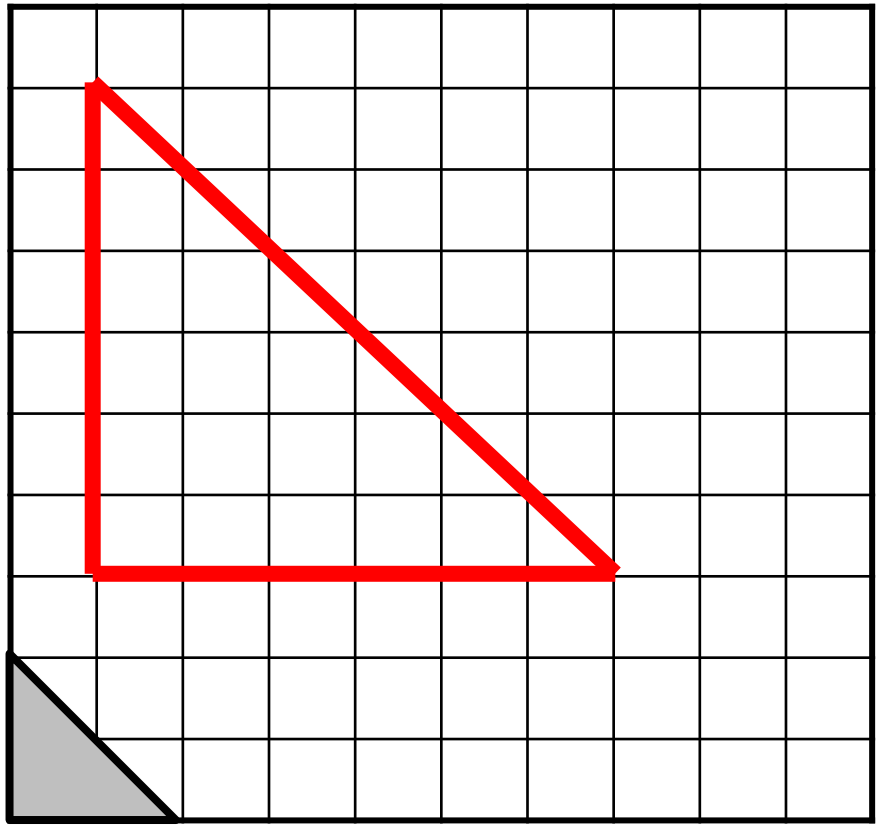
YOUR TURN

LO: enlarge a shape on a grid when given a scale factor and center of enlargement.

Enlarge this object by scale factor 3.



2 squares

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Mini-Plenary

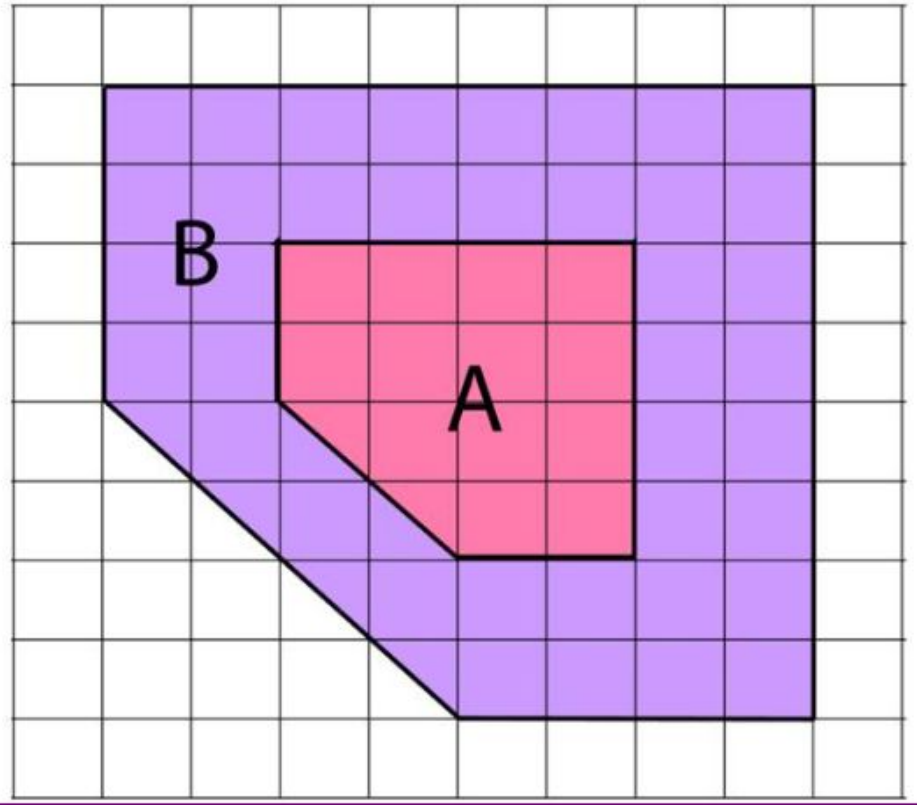
LO: **enlarge a shape on a grid when given a scale factor and center of enlargement.**

Enlargement

Learning Objective: Enlarge an object using a scale factor and centre.

Describe the enlargement that maps A onto B.

ANS



03:00

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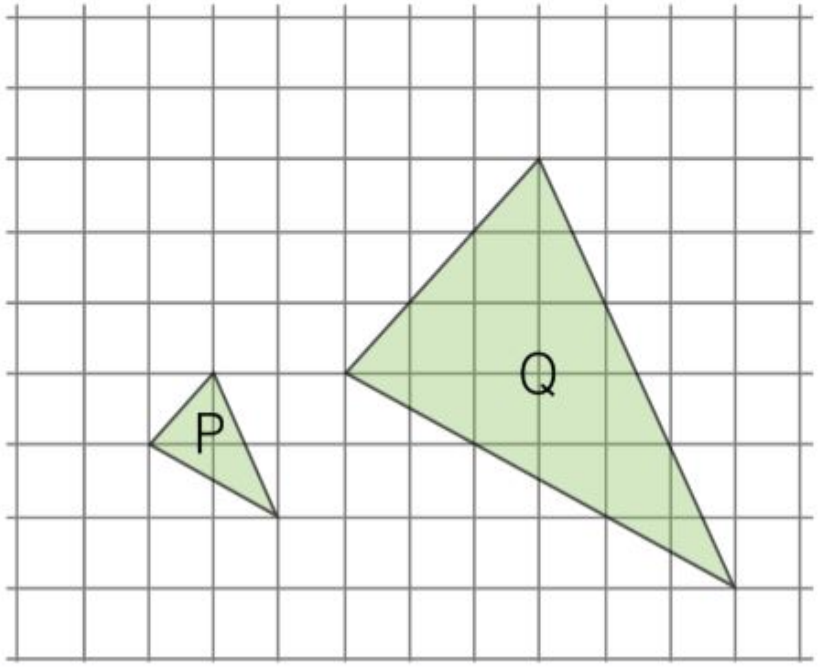
Introduction to enlargement

LO: **enlarge a shape on a grid when given a scale factor and center of enlargement.**

Exam-style question

03:00



a) Shape P is enlarged to obtain shape Q. What is the scale factor of enlargement?

b) Shape Q is enlarged to obtain shape P. What is the scale factor of enlargement?

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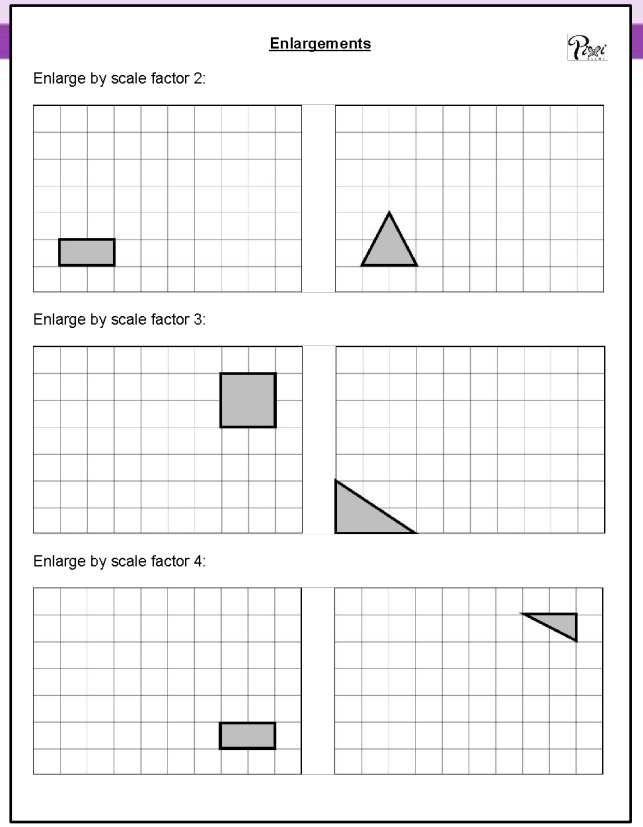
Core Task

...argement

LO: **enlarge a shape on a grid when given a scale factor and center of enlargement.**



Enlargements

Enlarge by scale factor 2:

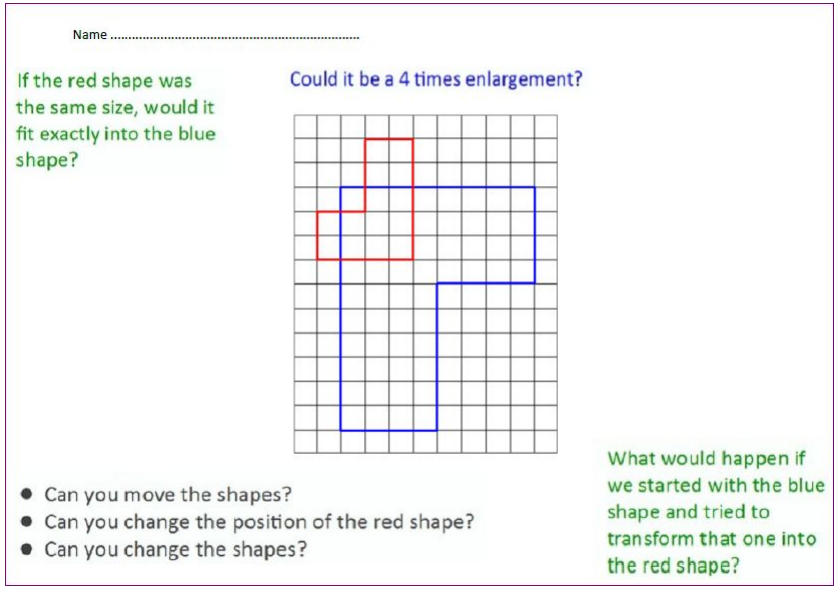
Enlarge by scale factor 3:

Enlarge by scale factor 4:

Enlarge the objects following the instructions on the sheet.

10:00

Challenge/Extension Task



Name .....

If the red shape was the same size, would it fit exactly into the blue shape?

Could it be a 4 times enlargement?

- Can you move the shapes?
- Can you change the position of the red shape?
- Can you change the shapes?

What would happen if we started with the blue shape and tried to transform that one into the red shape?

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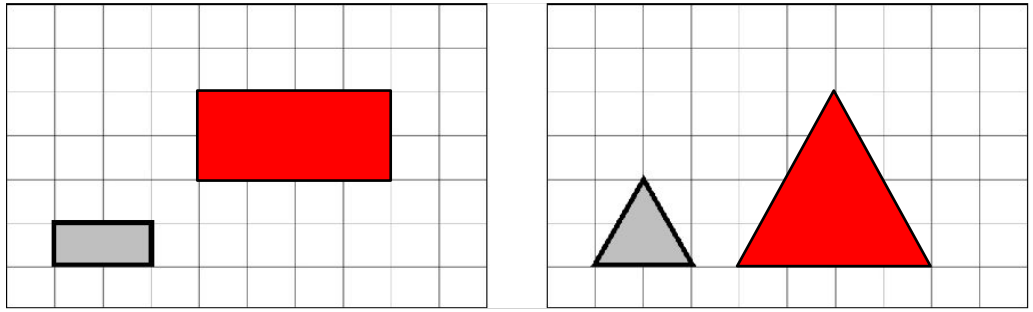
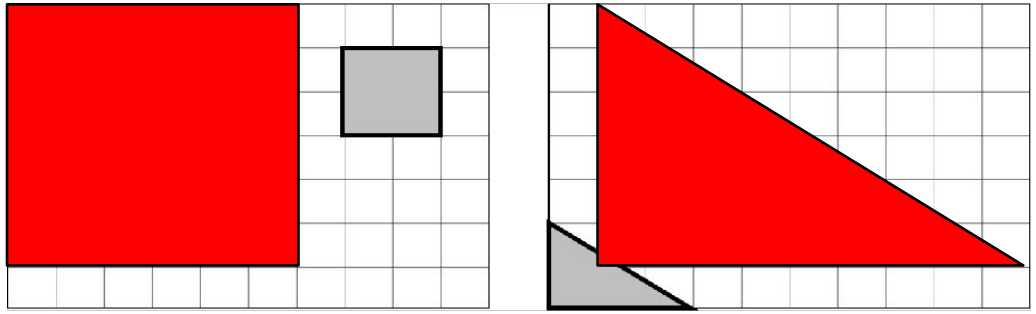
Answers

LO: **enlarge a shape on a grid when given a scale factor and center of enlargement.**

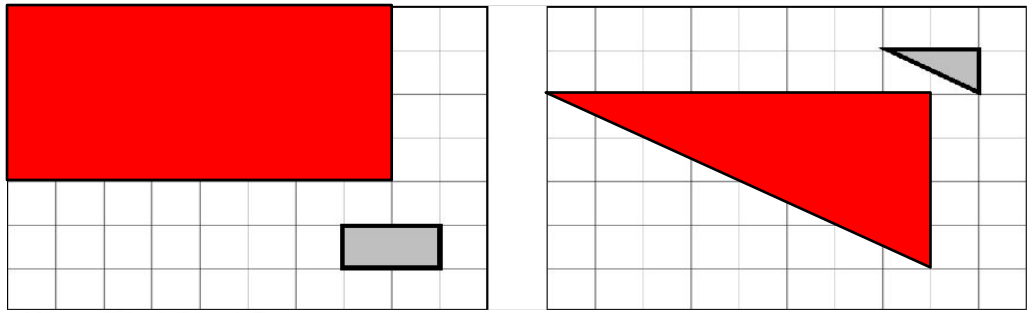
Enlarge by scale factor 2:



Enlarge by scale factor 3:



Enlarge by scale factor 4:



If the red shape was the same size, would it fit exactly into the blue shape?

The red shape is not **congruent** to the blue shape, but it is **similar**.

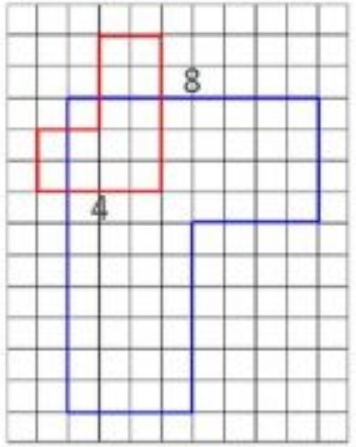
The blue shape is an **enlargement** of the red shape. It is twice as big as the red shape.

If it's two times the size, can it be three times or higher?

- Can you move the shapes?
- Can you change the position of the red shape?
- Can you change the shapes?

Could it be a 4 times enlargement?

It isn't if you compare corresponing sides - for example, the bottom edge of the red shape and the top edge of the blue one.



The red shape can be moved into the blue shape using two **transformations**:

1. **Rotation**
2. **Enlargement**

Or we could do the reverse:

1. **Enlargement**
2. **Rotation**

What would happen if we started with the blue shape and tried to transform that one into the red shape?

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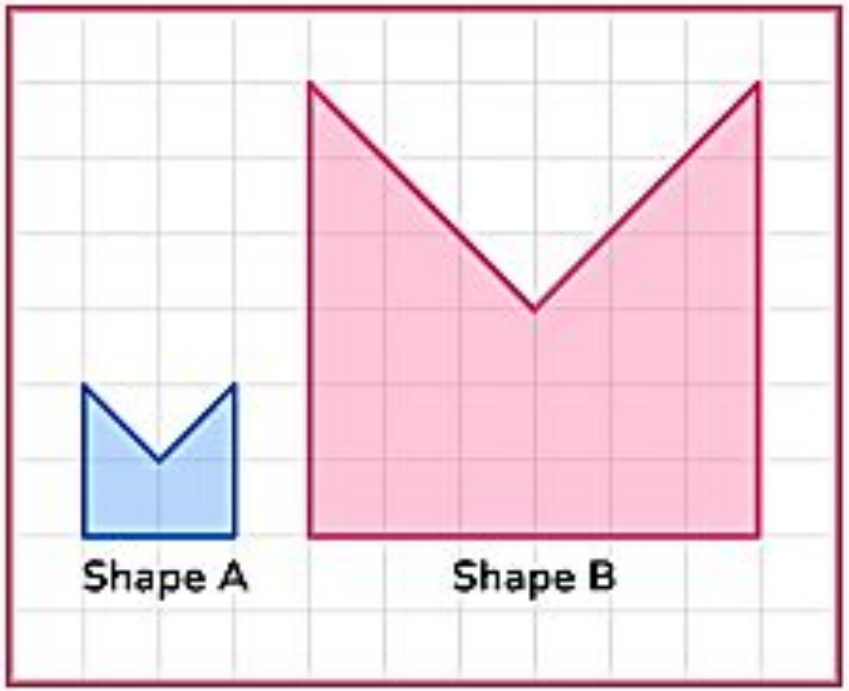
PLENARY

LO: **enlarge a shape on a grid when given a scale factor and center of enlargement.**

Shape A has been enlarged to make shape B. Calculate the scale factor.



02:00