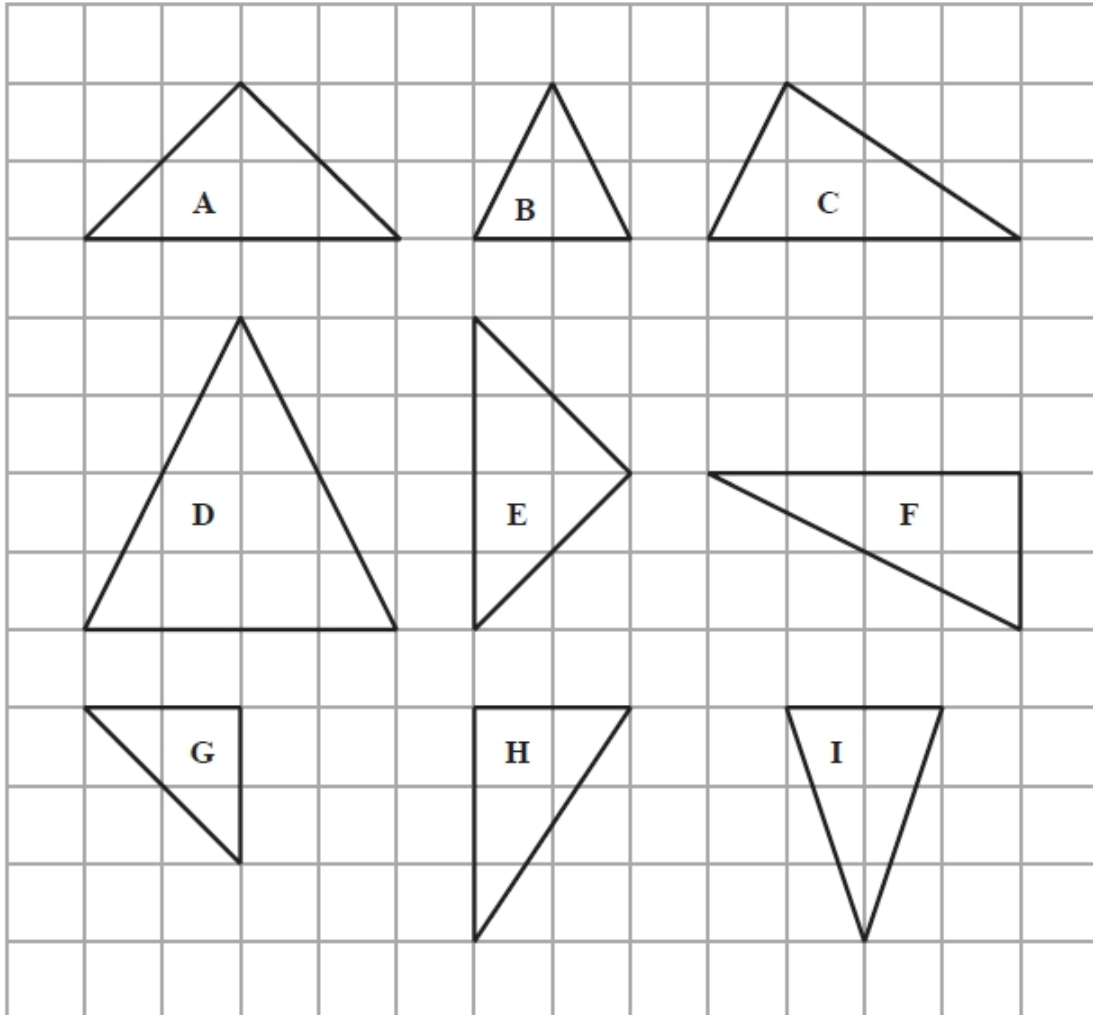


Foundation tier unit 19a check in test

Non-calculator

[Q1–2 linked]

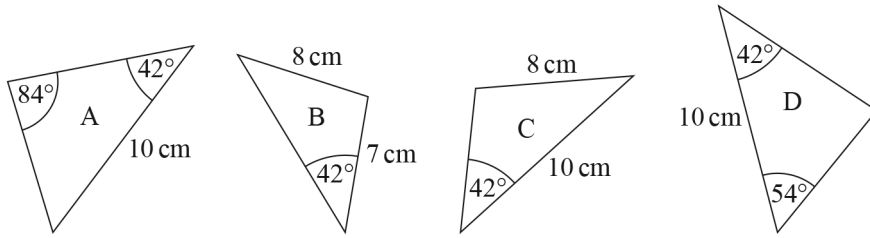
Q1. Here are some triangles drawn on a grid.



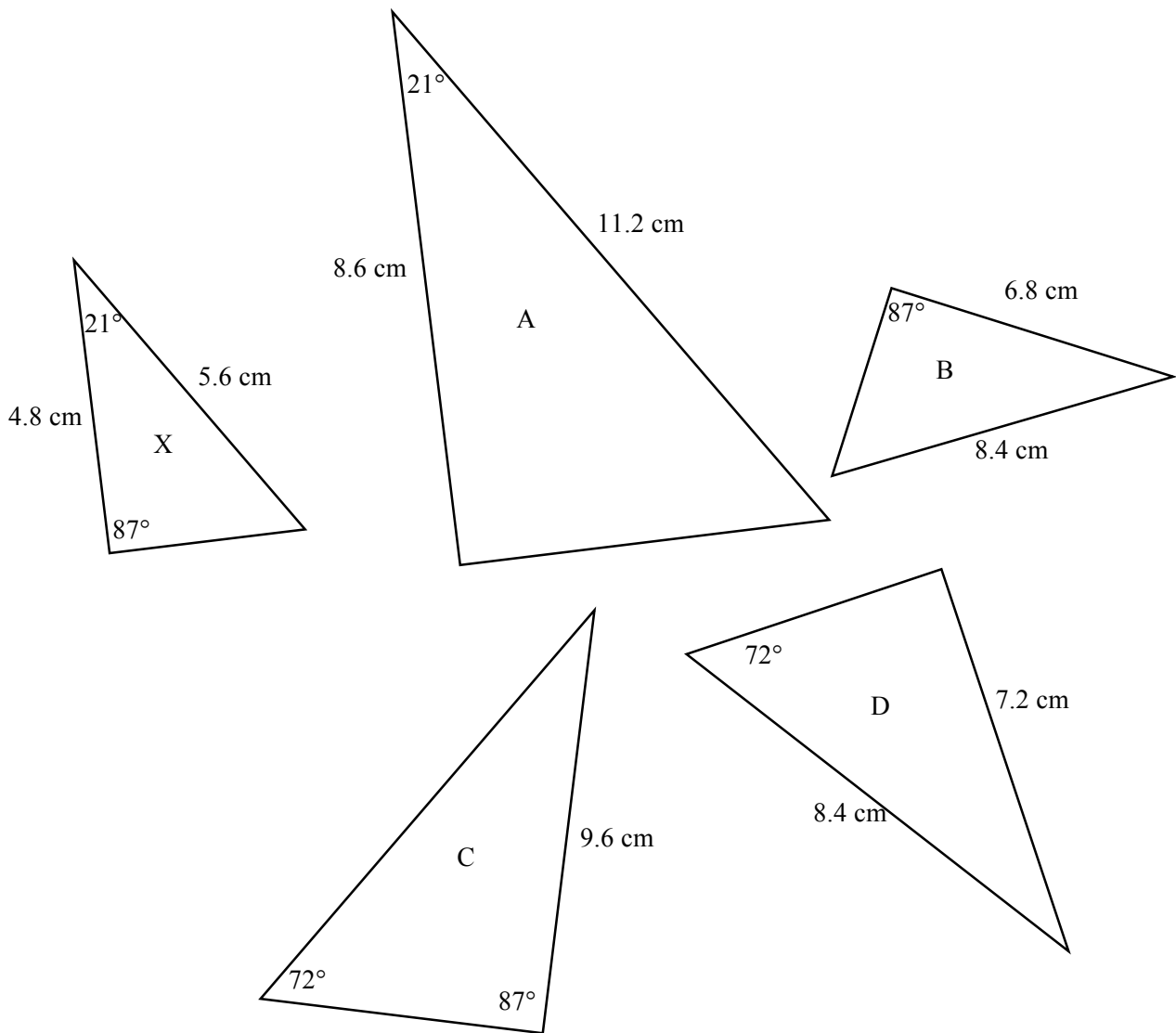
Two of these triangles are congruent.
Write down the letters of these triangles.

Q2. In the grid in question 1, one of the triangles is similar to triangle **B**.
Write down the letter of this triangle.

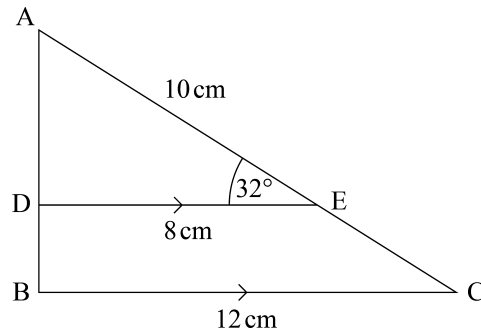
Q3. Identify the two congruent triangles.



Q4. Which triangle is similar to triangle X?



Q5. Triangle ADE is similar to triangle ABC.



Find the size of angle ACB.

Q6. A small photograph has a length of 4 cm and a width of 3 cm.

Shez enlarges the small photograph to make a large photograph.
The large photograph has a width of 15 cm.

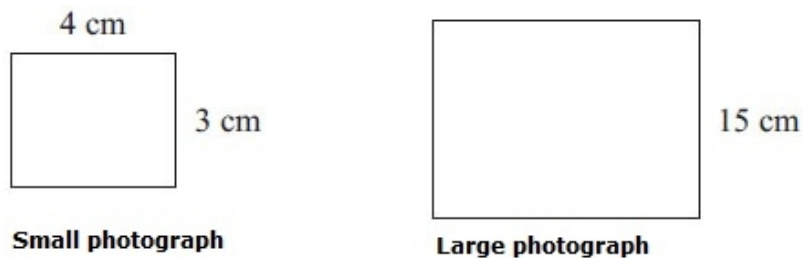
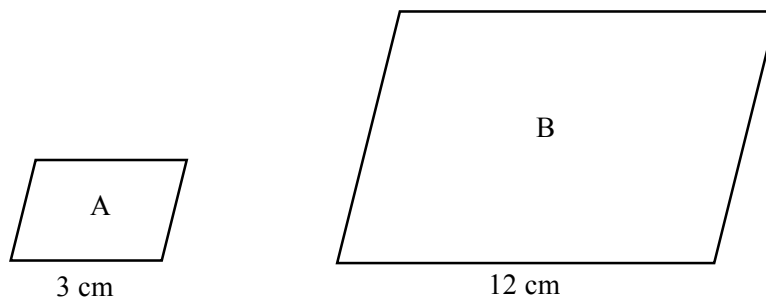


Diagram **NOT** accurately drawn

The two photographs are similar rectangles.
Work out the length of the large photograph.

Q7. Shape A is enlarged to make shape B.



Find the scale factor of the enlargement.

Q8. On a map, the distance between Charlestown and Deebury is 3 cm.
The scale of the map is 1 : 50 000.

What is the distance between Charlestown and Deebury in real life?
Give your answer in kilometres.

Q9. Shapes A and B are regular pentagons.

The width of B is 4 times the width of A.

The perimeter of B is 48 cm.

Work out the perimeter of A.

Q10. $ABCD$ and $PQRS$ are two rectangles.

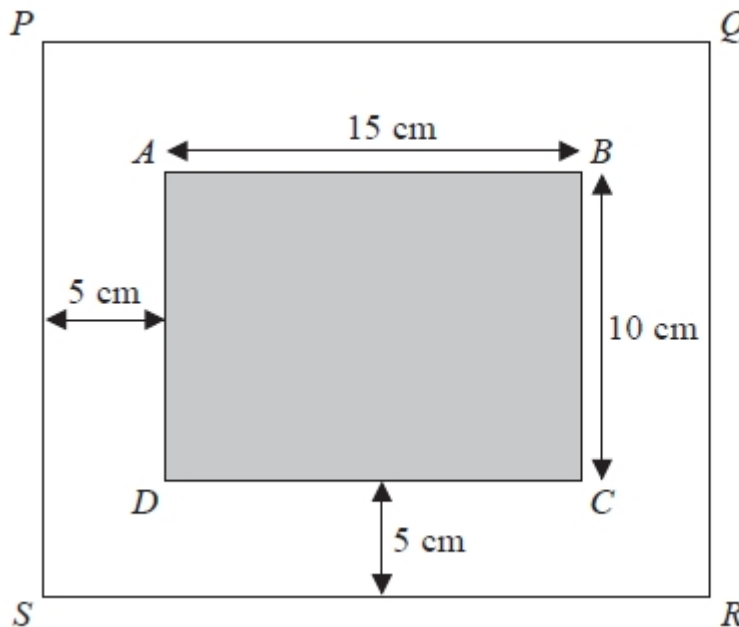


Diagram NOT accurately drawn

Rectangle $ABCD$ is 15 cm by 10 cm.

There is a space 5 cm wide between rectangle $ABCD$ and rectangle $PQRS$.

Are rectangle $ABCD$ and rectangle $PQRS$ mathematically similar?

You must show how you got your answer.

Topics listed in objectives

- Use the basic congruence criteria for triangles (SSS, SAS, ASA and RHS);
- Solve angle problems involving congruence;
- Identify shapes which are similar; including all circles or all regular polygons with equal number of sides;
- Understand similarity of triangles and of other plane shapes, use this to make geometric inferences, and solve angle problems using similarity;
- Identify the scale factor of an enlargement of a shape as the ratio of the lengths of two corresponding sides;
- Understand the effect of enlargement on perimeter of shapes;
- Solve problems to find missing lengths in similar shapes;
- Know that scale diagrams, including bearings and maps are ‘similar’ to the real-life examples.

Answers

Q1. A and E

Q2. D

Q3. A and D

Q4. C

Q5. 32°

Q6. 20 cm

Q7. 4

Q8. 1.5 km

Q9. 12 cm

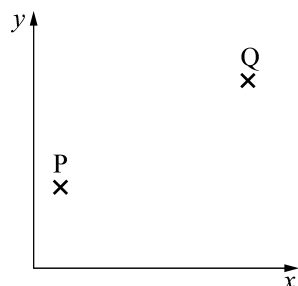
Q10. No, as $ABCD$ is 10×15 cm and $PQRS$ is 20×25 cm, so the scale factors for the enlargement of length and width are not the same.

Foundation tier unit 19b check in test

Non-calculator

[Q1–2 linked]

Q1. On this sketch graph, P is the point (1, 3) and Q is the point (8, 7).



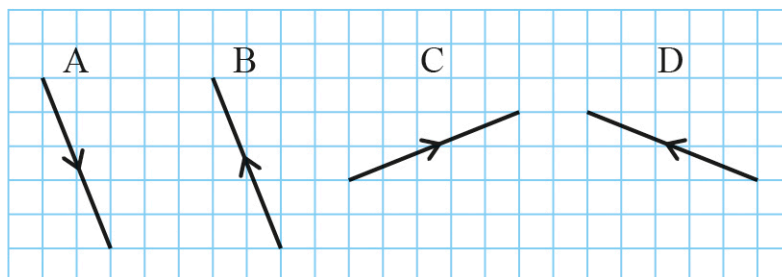
Work out the vector PQ .

Give your answer as a column vector.

Q2. Using the sketch graph in question 1, write $3PQ$ as a column vector.

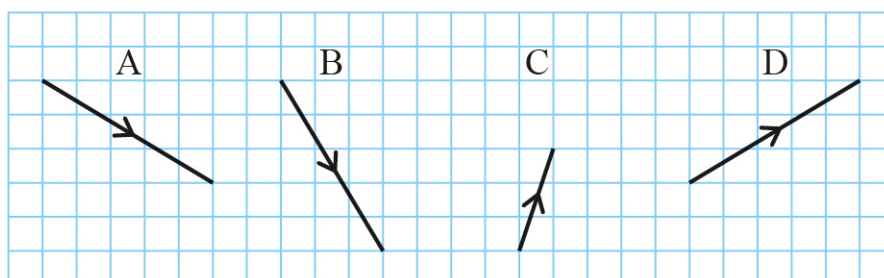
Q3. $\mathbf{a} = \begin{pmatrix} 2 \\ 5 \end{pmatrix}$

Which diagram represents \mathbf{a} ?



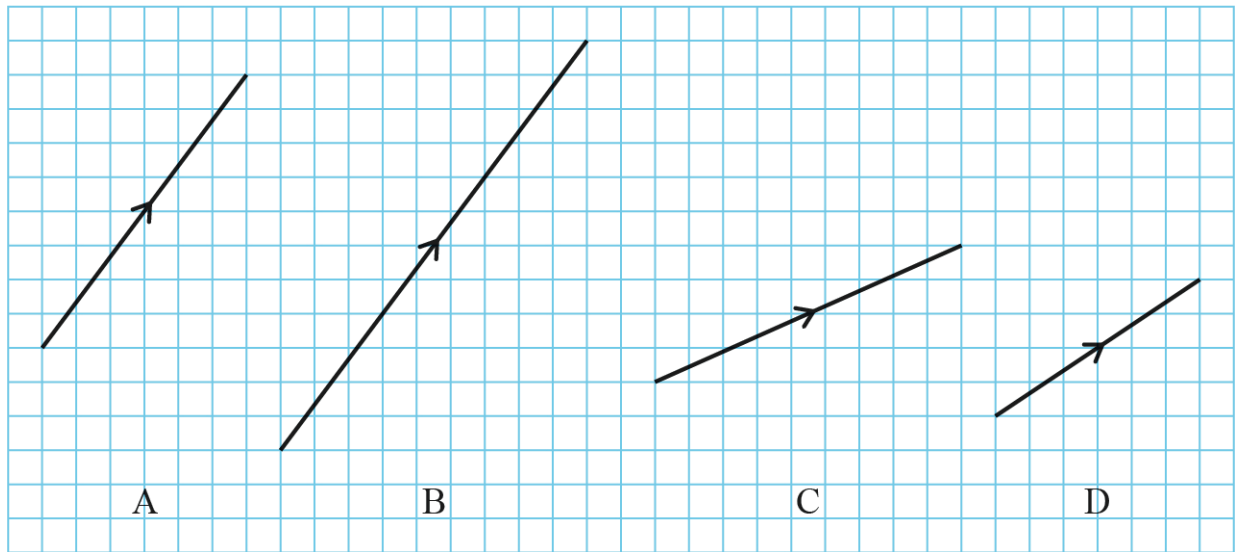
Q4. $\mathbf{a} = \begin{pmatrix} 2 \\ 5 \end{pmatrix}$ and $\mathbf{b} = \begin{pmatrix} 3 \\ 2 \end{pmatrix}$

Which diagram represents $\mathbf{a} + \mathbf{b}$?



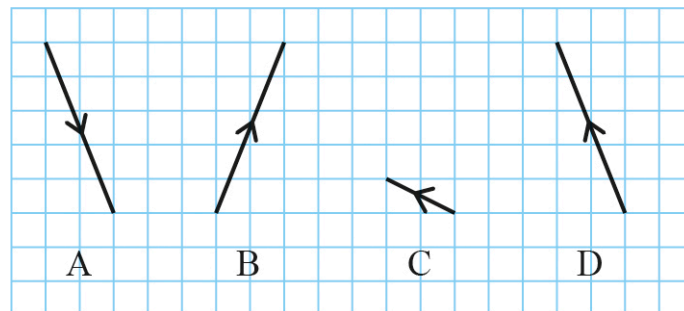
Q5. $\mathbf{x} = \begin{pmatrix} 3 \\ 4 \end{pmatrix}$

Which diagram represents $3\mathbf{x}$?



Q6. $\mathbf{p} = \begin{pmatrix} 2 \\ 3 \end{pmatrix}$ and $\mathbf{q} = \begin{pmatrix} 4 \\ 2 \end{pmatrix}$

Which diagram represents $\mathbf{p} - \mathbf{q}$?



Q7. Write as a single column vector $\begin{pmatrix} 4 \\ 7 \end{pmatrix} + \begin{pmatrix} 3 \\ 4 \end{pmatrix}$

Q8. Write as a single column vector $\begin{pmatrix} 4 \\ 2 \end{pmatrix} - \begin{pmatrix} 10 \\ 4 \end{pmatrix}$

Q9. $\mathbf{a} = \begin{pmatrix} 3 \\ 7 \end{pmatrix}$, $\mathbf{b} = \begin{pmatrix} 4 \\ 2 \end{pmatrix}$

Work out $\mathbf{b} - 2\mathbf{a}$ as a column vector.

Q10. Write down a vector that is parallel to $\begin{pmatrix} 3 \\ 2 \end{pmatrix}$ but three times as long.

Topics listed in objectives

- Understand and use column notation in relation to vectors;
- Be able to represent information graphically given column vectors;
- Identify two column vectors which are parallel;
- Calculate using column vectors, and represent graphically, the sum of two vectors, the difference of two vectors and a scalar multiple of a vector.

Answers

Q1.	7
	4
Q2.	21
	12
Q3.	A
Q4.	A
Q5.	B
Q6.	D
Q7.	1
	3
Q8.	6
	6
Q9.	2
	16
Q10.	9
	6