| Name: | Teacher Assessment |
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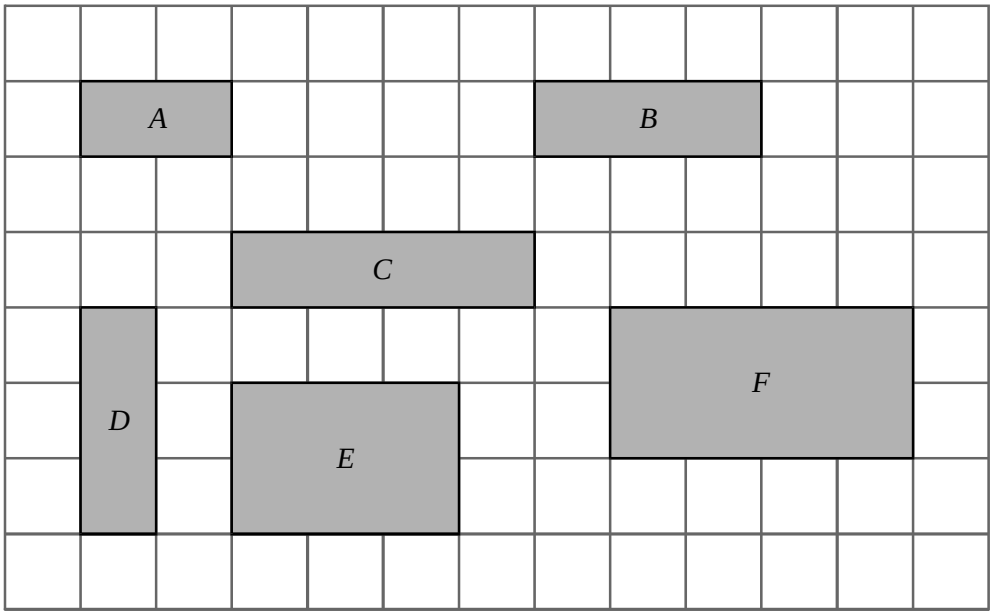
## Section A Congruency Grade E / D

**1.** Here are six rectangles on a centimetre grid.




(i) Which two rectangles are congruent?

Answer ..... and .....

**(1)**

(ii) Which two rectangles are similar?

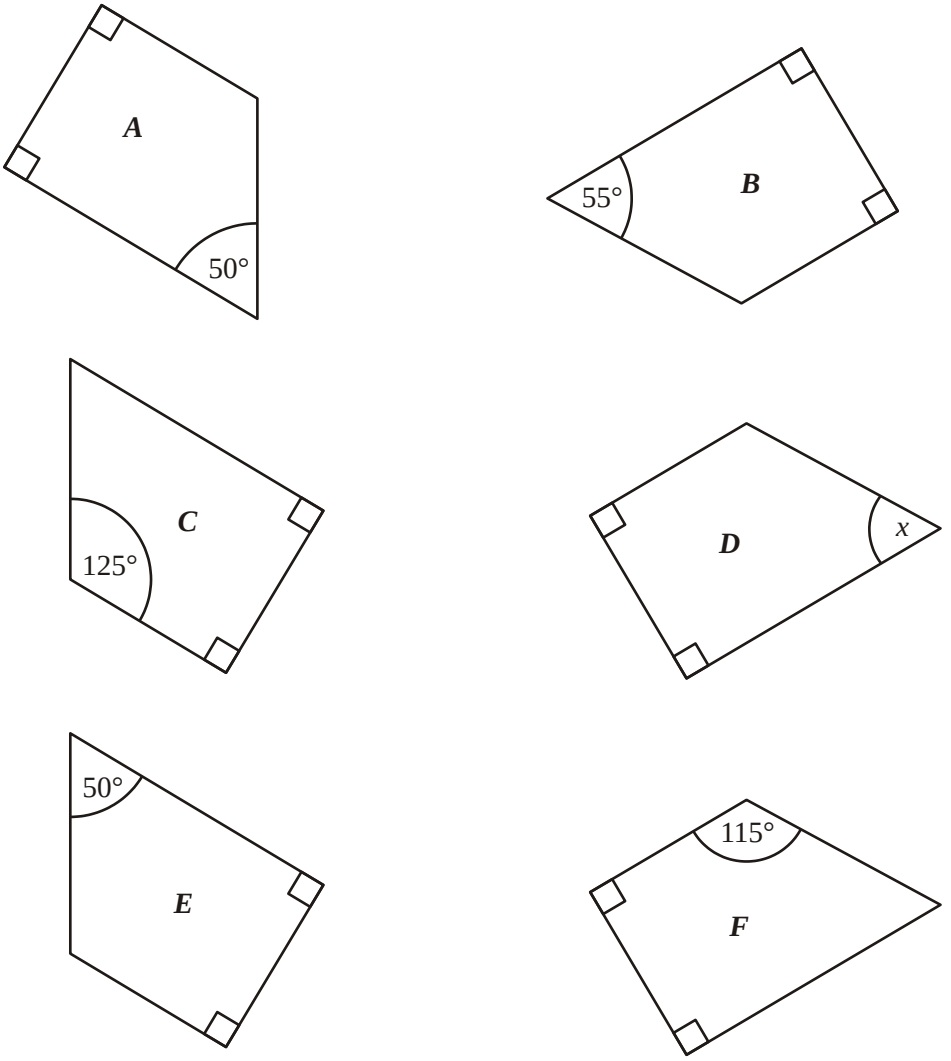
Answer ..... and .....

**(1)**

**(Total 2 marks)**

**2.** Rebecca has three rectangular sheets of paper.
She cuts each sheet into two pieces.
She now has the six pieces, ***A*** to ***F***, shown below.

Not drawn accurately




(a) Which piece is part of the same rectangle as ***A***?

Answer .....

**(1)**

(b) Which piece is part of the same rectangle as ***B***?

Answer .....

**(1)**

(c) Calculate the size of angle *x* on piece ***D***.

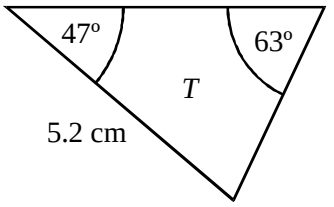
.....

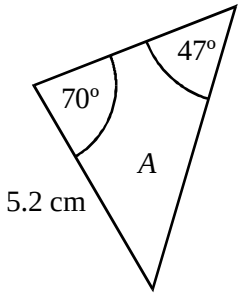
Answer *x* = ..... degrees

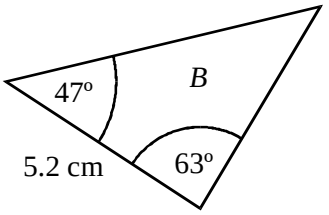
**(2)**

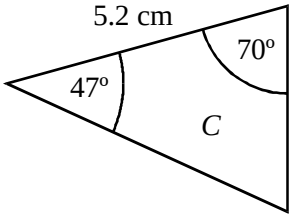
**(Total 4 marks)**

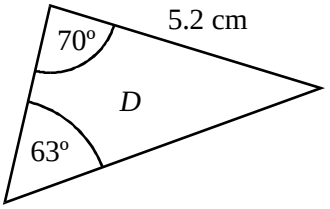
**3.** Triangle *T* and triangles *A, B, C, D* and *E* are not drawn accurately.

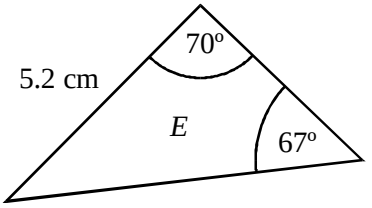


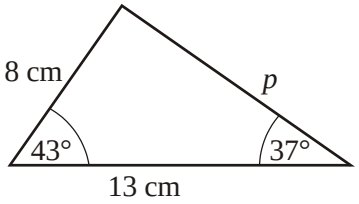



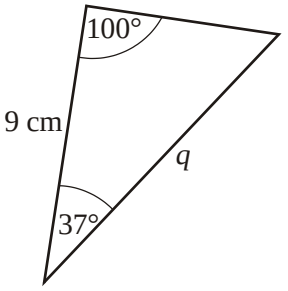

Which two of triangles *A, B, C, D* and *E* are congruent to triangle *T*?

Answer Triangle ..... and Triangle .....

**(Total 2 marks)**

**4.** The two triangles shown below are congruent.




Not drawn accurately

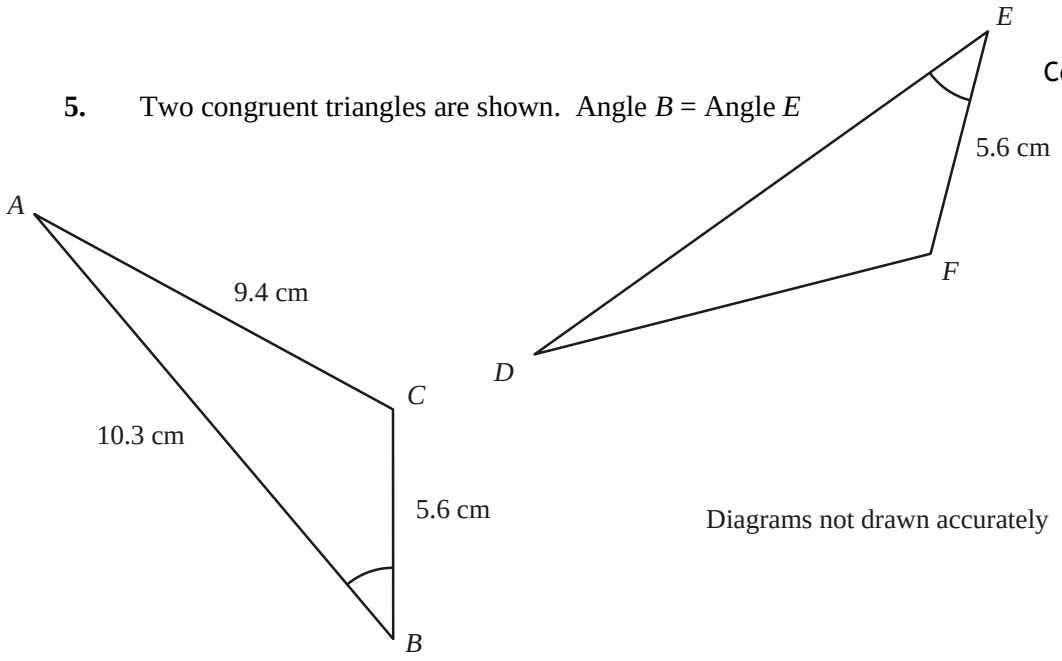
Write down the values of *p* and *q*

.....

Answer *p* = ..... cm *q* = ..... cm

**(Total 2 marks)**

**5.** Two congruent triangles are shown. Angle $B$ = Angle $E$




Diagrams not drawn accurately

(a) Write down the length of $DF$.

Answer ..... cm

**(1)**

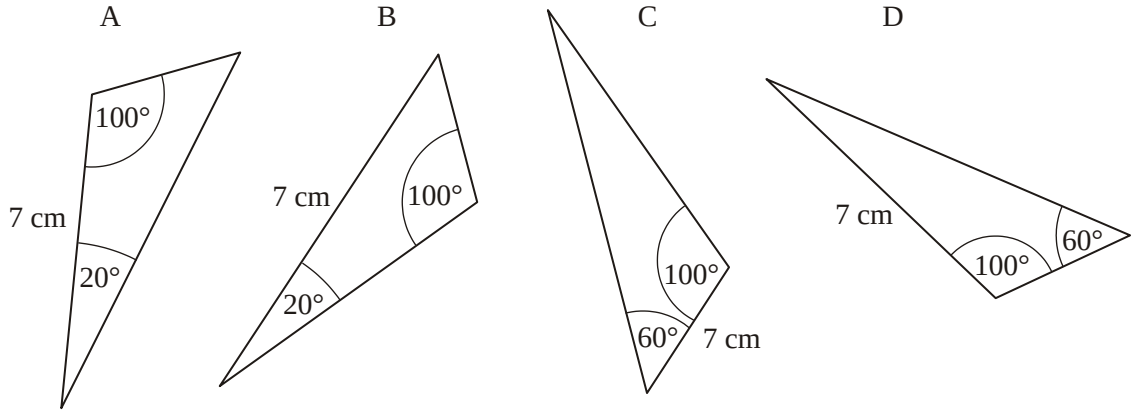
(b) Explain why angle $A$ = angle $D$

.....

.....

**(1)(Total 2 marks)**

**6.** (a) Which two of these triangles are congruent?




Answer …… and ……

**(1)**

(b) Give a reason for your answer.

.....

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**(1)(Total 2 marks)**

| Success: | Target: |
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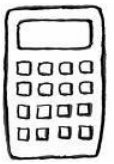
Teacher Assessment



## Section B Similar Shapes Grade D / C

**1.** (a) Which of these statements are correct?

**P** all isosceles triangles are similar

**Q** all squares are similar

**R** all parallelograms are similar

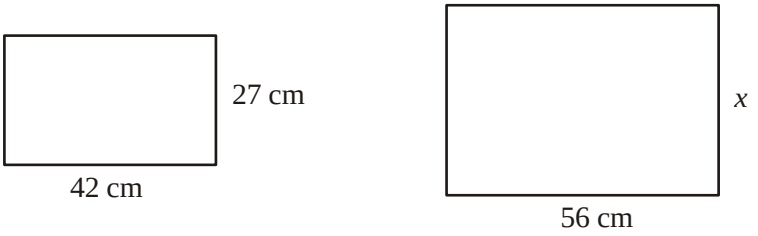
**S** all regular pentagons are similar

Answer .....

**(2)**

(b) These two rectangles are similar.

Not to scale




Calculate the value of *x*.

.....

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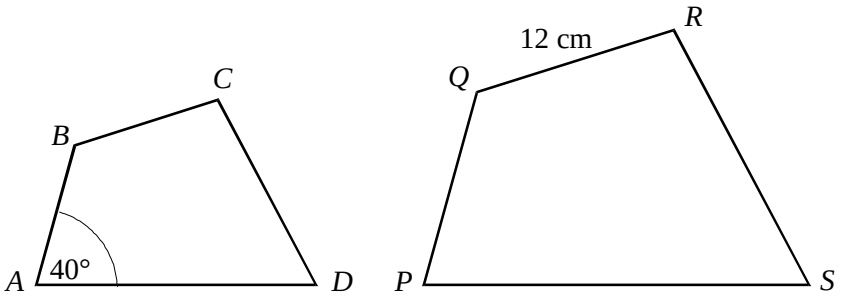
Answer ..... cm

**(3)**

**(Total 5 marks)**

**2.** *PQRS* is an enlargement with scale factor 1.5 of *ABCD*.




Not drawn accurately

(a) Calculate the length of *BC*.

.....

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.....

.....

Answer *BC* = ..... cm

**(2)**

(b) Write down the size of angle *QPS*.

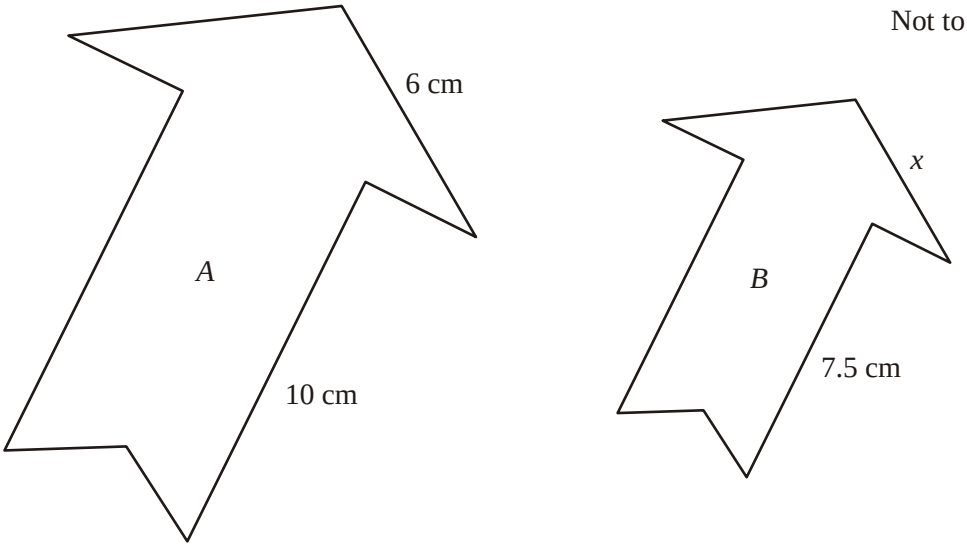
.....

Answer *QPS* = ..... degrees

**(1)(Total 3 marks)**

**3.** The diagrams show two similar shapes *A* and *B*.

Not to scale




(a) Work out the value of *x*.

.....

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Answer ……..……..... cm

**(3)**

(b) The perimeter of shape *B* is 30 cm.

Work out the perimeter of shape *A*.

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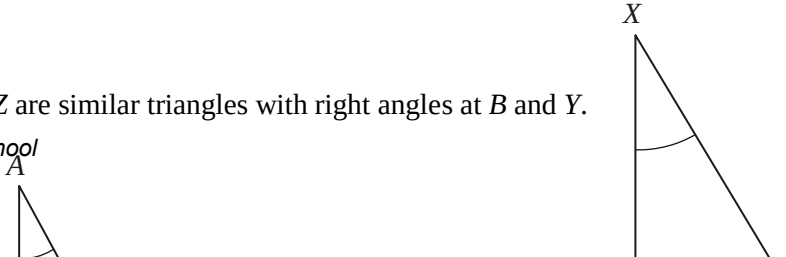
Answer ……..……..... cm

**(2)**

**(Total 5 marks)**

**4.** *ABC* and *XYZ* are similar triangles with right angles at *B* and *Y*.



$AC$ = 13 cm, $BC$ = 5 cm and $YZ$ = 12.5 cm

Work out the length of $XY$.

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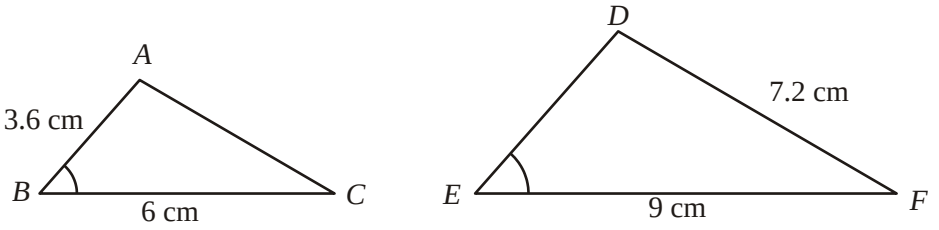
Answer ..... cm

**(Total 5 marks)**

**5.** Triangles $ABC$ and $DEF$ are similar. Angle $B$ = angle $E$
$AB$ = 3.6 cm and $BC$ = 6 cm $DF$ = 7.2 cm and $EF$ = 9 cm




(a) Calculate the length of $DE$.

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Answer ..... cm

**(2)**

(b) Calculate the length of $AC$.

.....

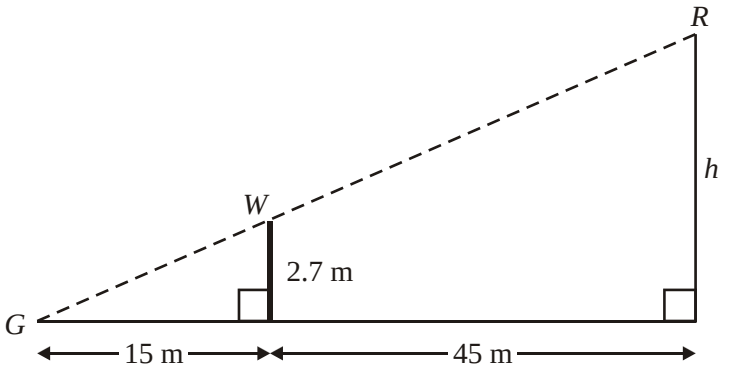
.....

.....

Answer ..... cm

**(2)(Total 4 marks)**

**6.** Gary, *G*, can just see the top of a radio mast, *R*, over a wall, *W*.
Gary is 15 m from the wall.
The wall is 45 m from the radio mast.
The wall is 2.7 m high.




Not to scale

Calculate the height of the radio mast, marked *h* on the diagram.

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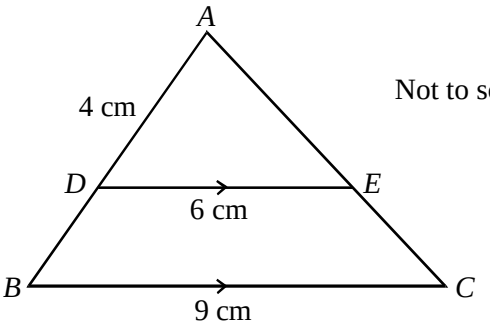
Answer ..... m

**(Total 3 marks)**

**7.** Triangles *ADE* and *ABC* are similar.

*DE* is parallel to *BC*.

*AD* = 4 cm, *DE* = 6 cm and *BC* = 9 cm.




Not to scale

Calculate the length of *BD*.

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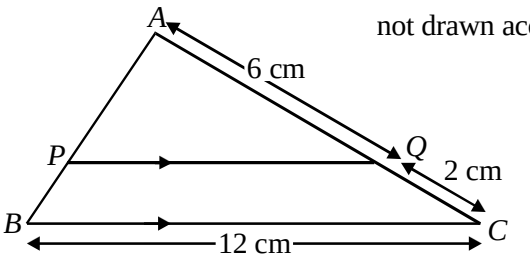
Answer ..... cm

**(Total 3 marks)**

**8.** Triangles *ABC and APQ* are similar.
*PQ* is parallel to *BC.*

*AQ* = 6 cm, *QC* = 2 cm and *BC* = 12 cm




Calculate the length of *PQ.*

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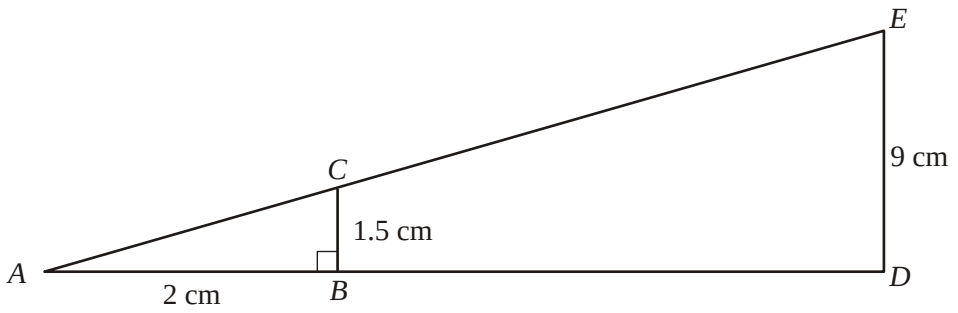
Answer.....cm

**(Total 3 marks)**

**9.** *ABC* and *ADE* are similar triangles.
*BC* = 1.5 cm, *DE* = 9 cm, *AB* = 2 cm




Calculate the length of *BD*.

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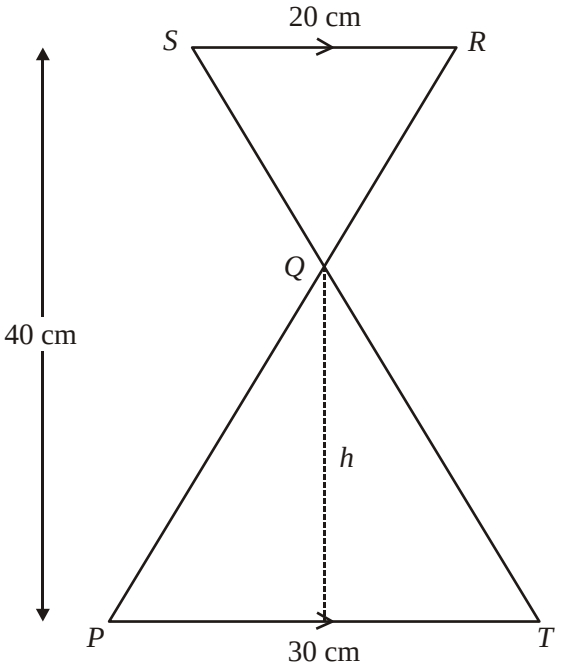
Answer ..... cm

**(Total 3 marks)**

**10.** In the diagram *SR* is parallel to *PT*.
*SQT* and *RQP* are straight lines.
*SR* = 20 cm and *PT* = 30 cm
The total height of the two triangles is 40 cm.

Not drawn accurately




Use similar triangles to calculate the height, *h* cm, of triangle *PQT*.

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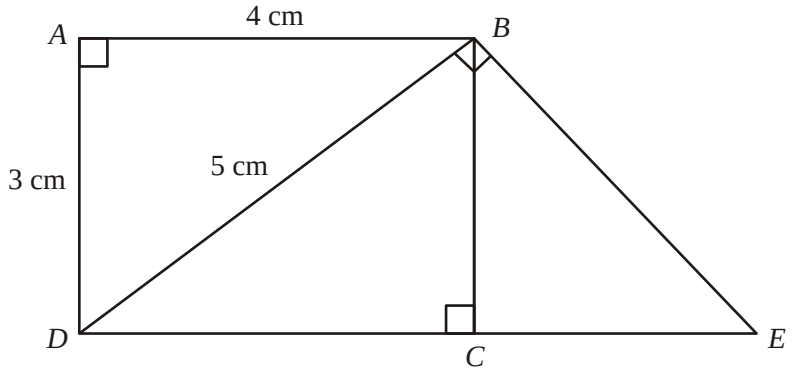
Answer *h* = ..... cm

**(Total 3 marks)**

**11.** *ABCD* is a rectangle.
*AB* = 4 cm, *AD* = 3 cm and *BD* = 5 cm.
*DCE* is a straight line.
Angle *DBE* is 90°




Not to scale

(a) Explain why triangles *ADB* and *BDE* are similar.

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**(2)**

(b) Find the length of *BE*.

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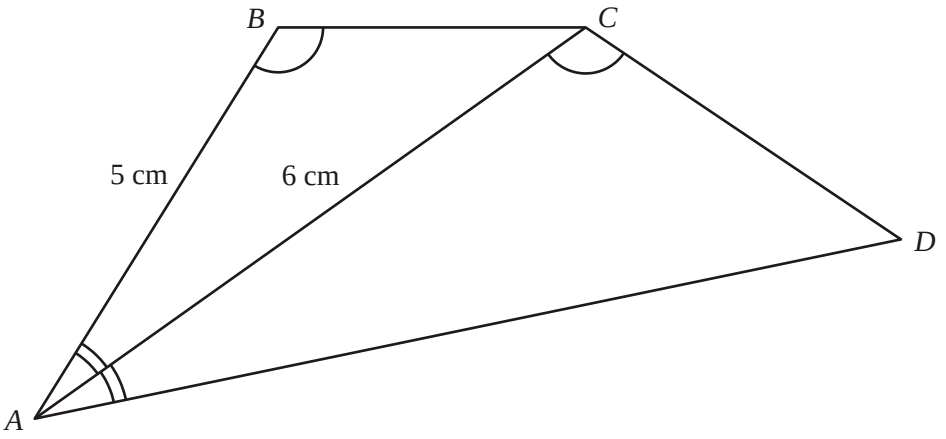
Answer .....cm

**(2)**
**(Total 4 marks)**

**12.** Triangles *ABC* and *ACD* are similar.
*AB* = 5 cm and *AC* = 6 cm.




Not drawn accurately

Calculate the length of *AD*.

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Answer.....cm

**(Total 3 marks)**

| Success: | Target: |
|---|---|
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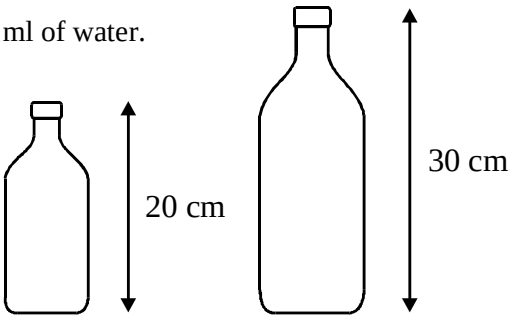
## Section C Similar Solids Grade A / A*

**1.** Two similar bottles are shown below.

The smaller bottle is 20 cm tall and holds 480 ml of water.

The larger bottle is 30 cm tall.




Not to scale

How much water does the larger bottle hold?

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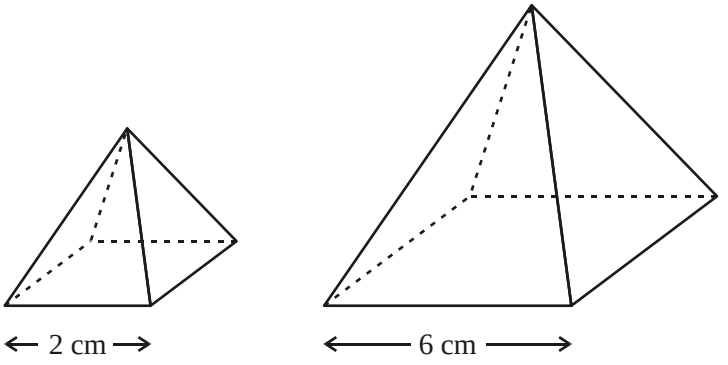
Answer ..... ml

**(Total 2 marks)**

**2.** A square-based pyramid with a base of side 2 cm has a volume of 2.75 $cm^3$.




Not to scale

What is the volume of a similar square-based pyramid with a base of side 6 cm?

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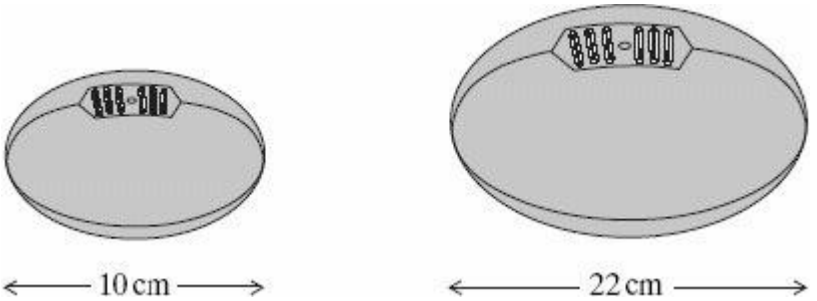
Answer .....$cm^3$

**(Total 2 marks)**

**3.** A child's rugby ball is 10 cm long and has a volume of 200 $cm^3$.
It is similar in shape to a full-size rugby ball.
A full-size rugby ball is 22 cm long.




Find the volume of the full-size ball.

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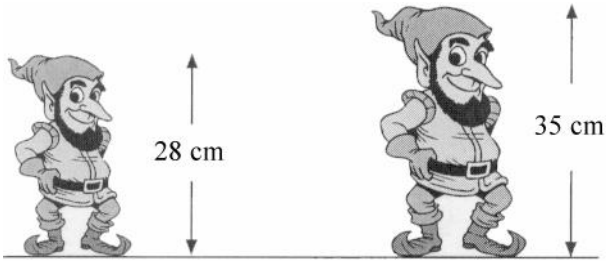
Answer ..... $cm^3$

**(Total 2 marks)**

**4.** Gnomes 'R'Us makes garden gnomes in two sizes.
The gnomes are similar in shape.
The smaller gnome is 28 cm high and the larger one is 35 cm high.




It takes 7936 $cm^3$ of plaster to make a small gnome.

How much plaster is needed to make a large gnome?

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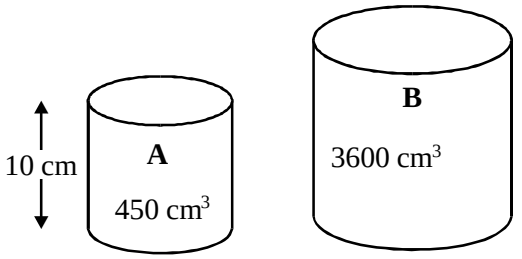
Answer.....$cm^3$

**(Total 3 marks)**

**5.** *A* and *B* are two similar cylinders.




The height of cylinder *A* is 10 cm and its volume is 450 $cm^3$.
The volume of cylinder *B* is 3600 $cm^2$.

Calculate the height of cylinder *B*.

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Answer ..... cm

**(Total 3 marks)**

**6.** (a) Explain why the volume of a cube increases by a factor of 8 when the side length is doubled.

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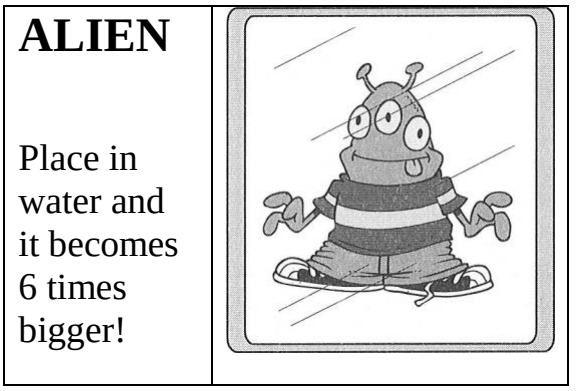
**(2)**

(b) June recently bought a small toy in the local shop.




It was originally 8 cm tall.
After she placed it in water it grew to a similarly shaped alien.
The height was then 14.5 cm.
Is the claim on the pack justified?

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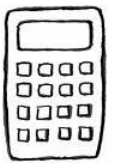
**(3)**
**(Total 5 marks)**

| Success: | Target: |
|---|---|
| | |

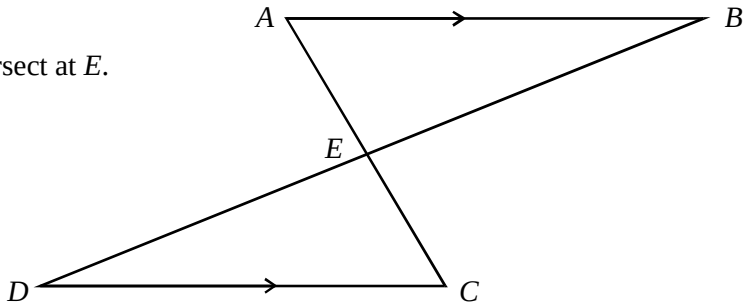
Teacher Assessment



## Section D Proving Congruency Grade A / A*

**1.** In the diagram, the lines *AC* and *BD* intersect at *E*.

*AB* and *DC* are parallel and *AB* = *DC*.




Prove that triangles *ABE* and *CDE* are congruent.

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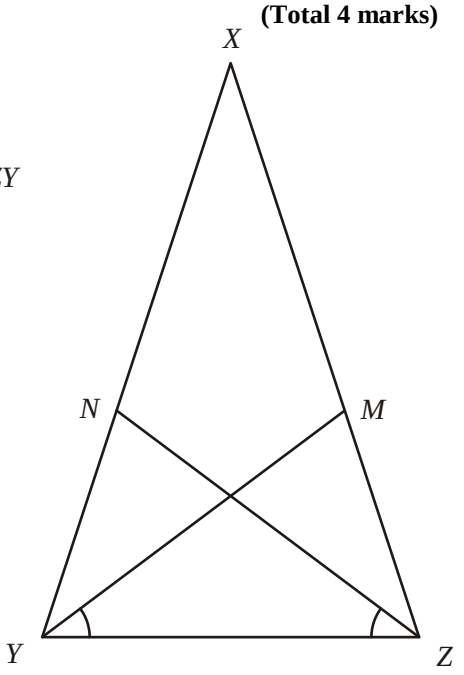
**(Total 4 marks)**

**2.** *XYZ* is an isosceles triangle in which *XZ* = *XY*
*M* and *N* are points on *XZ* and *XY* such that angle *MYZ* = angle *NZY*




Prove that triangles *YMZ* and *ZNY* are congruent.

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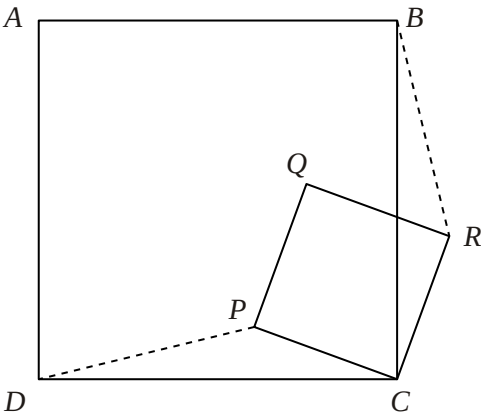
**(Total 4 marks)**

**3.** In the diagram *ABCD* and *PQRC* are squares.




Use congruent triangles to prove that *DP* = *BR*

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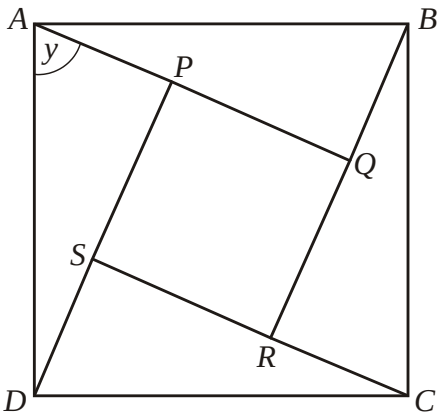
**(Total 4 marks)**

**4.** *ABCD* and *PQRS* are squares.
Angle *DAP* = *y*




Prove that triangles *ABQ* and *DAP* are congruent.

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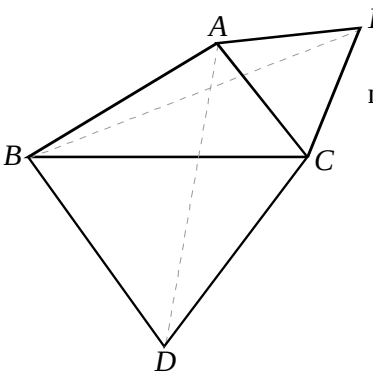
**(Total 4 marks)**

**5.** Triangle *ABC* is scalene.
Triangles *BCD* and *ACE* are equilateral.




not drawn accurately

Prove that triangles ADC and EBC are congruent.

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**(Total 4 marks)**

| Success: | Target: |
|---|---|
| | |