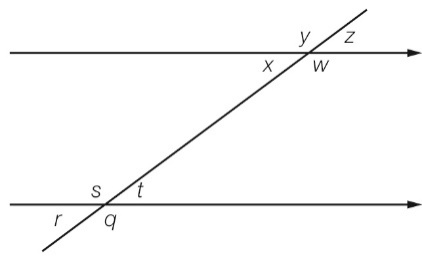
Multiple-choice section – choose the correct answer

Question 1 [6.1]

The angle co-interior to *t* is:



A *w* B *s* C *t* D *x*

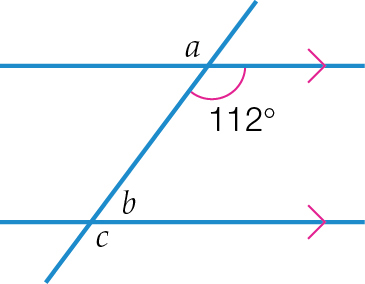
Question 2 [6.1]

The supplementary angle of 65° is:

A 25° B 35° C 255° D 115°

Question 3 [6.1]

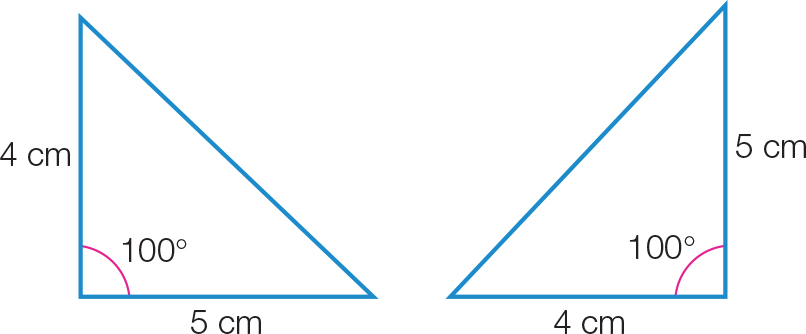
Which of these three values in the order of *a, b* and *c* are correct in the diagram?



A 112°, 112°, 112° B 112°, 68°, 112° C 68°, 68°, 68° D 68°, 112°, 68°

Question 4 [6.2]

Which congruence test proves that the given pair of triangles is congruent?



A RHS B SSS C SAS D ASA

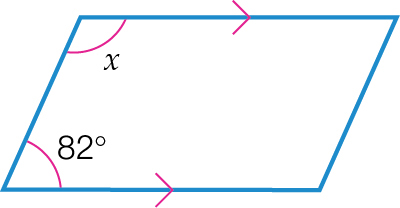
Question 5 [6.4]

An equilateral triangle of side length 20 cm is reduced to become a triangle of side length 10 cm. The scale factor used is:

A  B 2 C  D 20

Question 6 [6.1,6.3]

What is the value of *x* in the following diagram?



A 82° **B** 180° **C** 98° **D** 8°

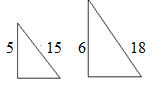
Question 7 [6.3]

The sum of the interior angles in a regular pentagon is:

A 360° B 180° C 540° D 720°

Question 8 [6.5]

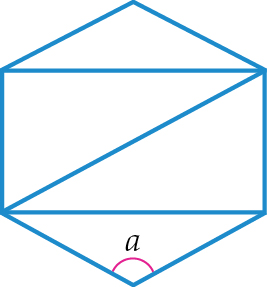
The scale factor of the pair of similar triangles is:



**A** **** **B** **** **C** **** **D** ****

Question 9 [6.3]

Find the value of angle *a* in this regular hexagon.



**A** 180° **B** 108° **C** 120° **D** 720°

Multiple-choice results: \_\_\_ / 9

Short answer section

Question 10 3 marks [6.2,6.5]

Use words from the list below to complete the following sentences.

shape size corresponding angles supplementary similar co-interior angles

**(a)** Two congruent triangles are the same \_\_\_\_\_\_\_\_\_\_\_ and the same \_\_\_\_\_\_\_\_\_\_\_.

**(b)** Triangles that are the same shape but not the same size are\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Question 11 2 marks [6.1]

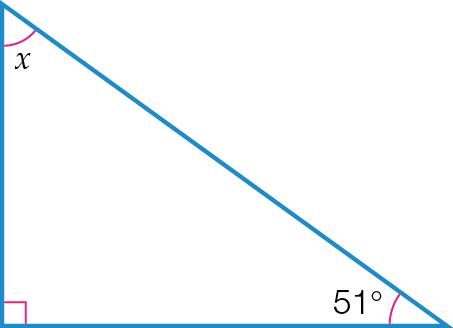
State the values of *a*, *b*, *c, d* and *e* for this pair of parallel lines and transversal.

|  |  |
| --- | --- |
| C:\Users\Maja\AppData\Local\Microsoft\Windows\INetCache\Content.Word\PM2e_09_EB_06_FBT_05.jpg | *e* and *f* = 72° + 108° and co-interior angles.  *b* and72° are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  *a* and *d* are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  *c* and *g* are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  *b* and *e* are\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

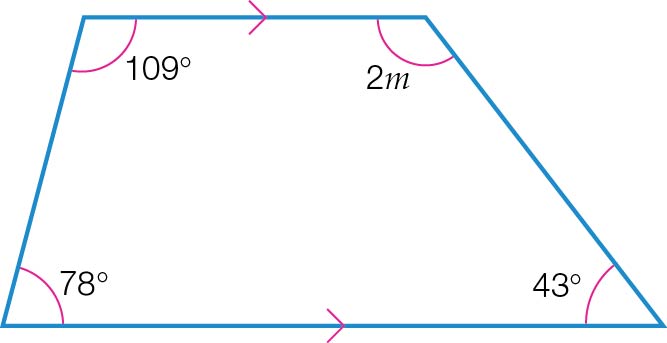
Question 12 6 marks [6.3]

Name each quadrilateral andfind the values of the pronumerals for each.

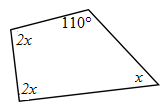
**(a)**



**(b)**



**(c)**



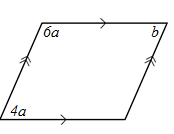
2*x* + \_\_\_ + \_\_\_ + 110 = 360

\_\_\_ *x* + 110 – 110 = 360 – 110

­­­\_\_\_ *x* = ­\_\_\_

*x* = \_\_\_

**(d)**



(*Note:* Co-interior angles in parallel lines add up to 180°.)

6*a* + \_\_\_\_ = 180°

\_\_\_\_\_*a* = 180°

*a* = \_\_\_\_

*b* = 4*a* (opposite angles of a parallelogram are equal)

*b* = \_\_\_\_\_

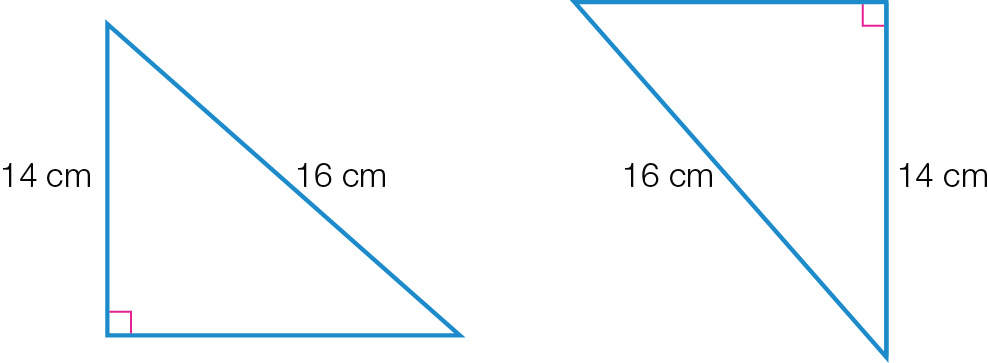
Question 13 3 marks [6.5]

Complete the working below to show that the pair of triangles are similar.

|  |  |
| --- | --- |
|  | ∠*ACB* = \_\_\_\_\_ (use the angle sum of triangle)  ∠*EDF* = \_\_\_\_\_ (use the angle sum of triangle)  In ∆*ABC* and ∆*DEF*  ∠*ABC* = ∠*\_\_\_\_\_\_* (both 110°)  ∠*ACB* = ∠*DFE* (both \_\_\_\_)  ∠*BAC* = ∠*EDF* (both \_\_\_\_)  ∴ ∆*ABC* ~ ∆*DEF* (\_\_\_\_\_) |

Question 14 2 marks [6.2]

Give reasons why the following pair of triangles are congruent.



The hypotenuse in each triangle is \_\_\_\_\_ cm.

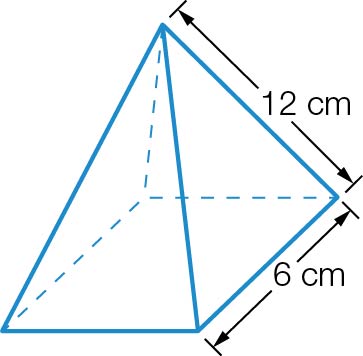
Each triangle has another side equal to \_\_\_\_ cm.

Each triangle has a \_\_\_\_\_\_\_\_\_ angle.

The triangles are shown to be congruent using the \_\_\_\_\_\_ test.

Question 15 2 marks [6.7]

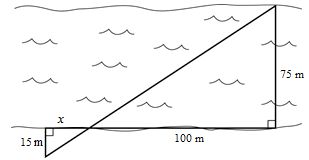
Draw the net of the shape below, showing all necessary measurements.



Question 16 2 marks [6.6]

Use the properties of similar triangles to find the distance across the river.

The triangles are similar because they each have a \_\_\_\_\_\_\_\_ angle and a pair of \_\_\_\_\_\_\_\_\_\_\_\_ opposite angles that are equal.

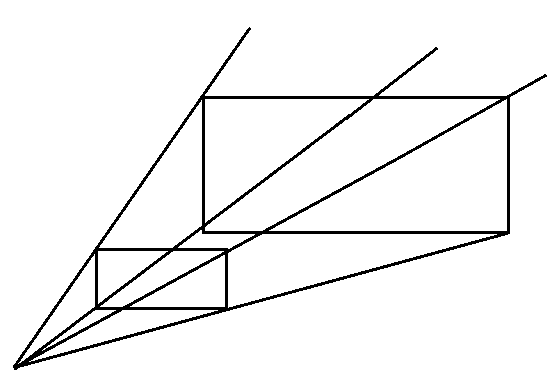




Question 17 3 marks [6.4]

The small rectangle has been enlarged to the large rectangle.

By measuring the sides of each rectangle, determine the scale factor.



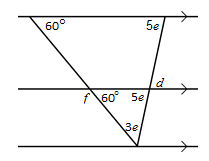
Length of side of small rectangle = \_\_\_\_\_\_

Length of side of large rectangle = \_\_\_\_\_\_

Scale factor = large side ÷ small side = \_\_\_\_ ÷ \_\_\_\_ = \_\_\_\_\_

Question 18 3 marks [6.1]

Find the value of the pronumerals. Give reasons for your answer.



5*e* + 3*e* + \_\_\_\_ = 180° (angle sum of triangle is 180°)

8*e* + 60° = 180°

8*e* = \_\_\_\_\_

*e* = \_\_\_\_\_ ÷ 8

*e* = \_\_\_\_\_

*d* = 5*e* (alternate angles in parallel lines are equal)

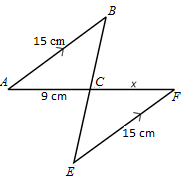
*d* = 5 × \_\_\_

= \_\_\_\_

*f* = \_\_\_\_

Question 19 3 marks [6.2]

Prove that ∆*ABC* ≡ ∆*FEC* and then find the value of *x*.



In ∆*ABC* and ∆*FEC*,

∠*ABC* = ∠*\_\_\_\_* (\_\_\_\_\_\_\_\_\_\_\_\_\_ angles, *AB* || *EF*)

∠*BCA* = ∠*\_\_\_\_* (\_\_\_\_\_\_\_\_\_\_\_\_\_ opposite angles)

*AB* = *EF* (both \_\_\_ cm, given)

∴ ∆*ABC* ≡ ∆*FEC* (\_\_\_\_\_\_)

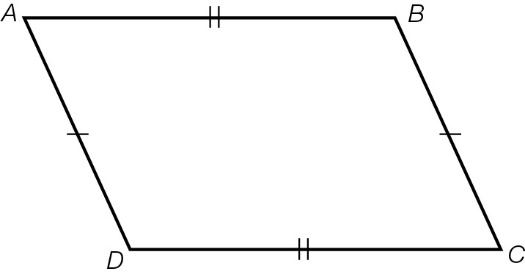
∴ *x* = \_\_ (matching sides of congruent triangles)

Short answer results: \_\_\_ / 30

Extended answer section

Question 20 9 marks [6.3]

A special type of quadrilateral is shown below.



**(a)** What is the name of this quadrilateral?

**(b)** Write the pairs of equal sides.

**(c)** Write the pairs of equal angles.

**(d)** One diagonal is *AC*. Write the name of the other diagonal.

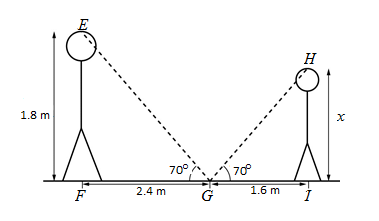
**(e)** Draw the diagonal *AC* on the figure. Write the names of the two triangles formed.

∆\_\_\_\_\_ and ∆\_\_\_\_\_\_

**(f)** Are the two triangles from part **(e)** congruent? Name the test used.

Question 21 8 marks [6.6]

Christy’s dad bounces a ball from his head height and Christy catches it at her head height, as the following diagram shows. If her dad is 1.8 m tall, how tall is Christy?



In ∆*EFG* and ∆*HIG*

∠*EFG* = ∠*\_\_\_\_* = 90° (given)

∠*EGF* = ∠*\_\_\_\_* (given)

∠*GEF =* ∠*\_\_\_\_* (angle sum in triangle)

∴ ∆*EFG* ~ ∆*HIG* (\_\_\_\_)

 (matching sides of similar triangles are proportional)



Question 22 4 marks [6.6]

Mike is playing a game of snooker.

He is at point *A* and is aiming his ball at point *C*. Once the ball hits point *C*, it will reflect and go to point *D*.

Mike knows that the angle that a ball approaches the cushion is the same as the angle it bounces off the cushion. The path of the ball creates two similar triangles. Calculate the distance from point *E* to point *D*.

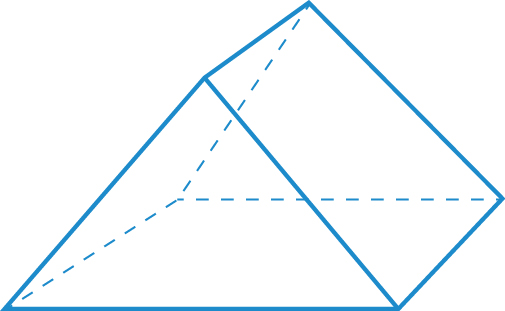
|  |  |
| --- | --- |
|  | ∆*ABC* is similar to ∆*DEC*.  *CE* = \_\_\_\_ m |

Question 23 3 marks [6.7]

The formula below connects the number of edges (*E),* the number of faces (*F*) and the number of vertices (*V*) in any polyhedron.

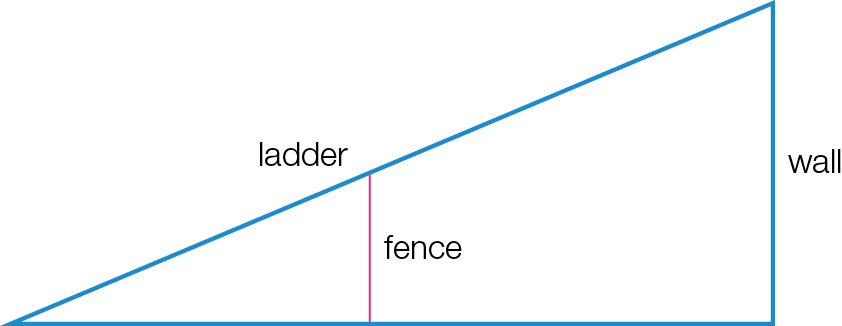
Show working using the formula to prove the number of edges of the following polyhedron.

*F + V* – 2= *E*



Question 24 3 marks [6.6]

A ladder is placed against the side of a house over the side of a 2.2 m fence. The foot of the ladder is 4.6 m from the fence and the fence is 8.2 m from the wall.



**(a)** Label all the measurements given.

**(b)** Determine the height of the wall. Show the similar triangles in your working.

Extended answer results: \_\_\_ / 27

TOTAL test results: \_\_\_ / 66