Name: _____

Similar Triangles

and other 2D shapes

Date:

Time:

Total marks available:

Total marks achieved: _____
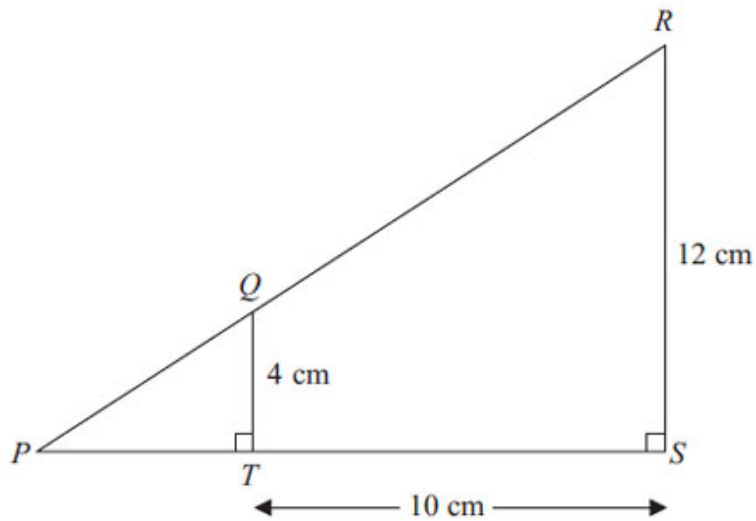
Questions

Q1.

Diagram **NOT** accurately drawn

PQR and *PTS* are straight lines.
Angle *PTQ* = Angle *PSR* = 90°
QT = 4 cm
RS = 12 cm
TS = 10 cm

(a) Work out the area of the trapezium *QRST*.

. . . . cm²

(2)

(b) Work out the length of *PT*.

. . . . cm

(3)

(Total for Question is 5 marks)
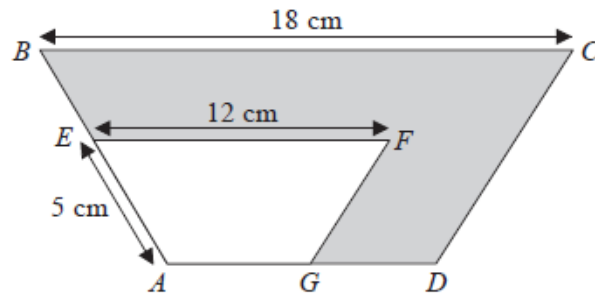
Q2.

18 cm

12 cm

5 cm

B   C
E   F
A G D

Diagram NOT accurately drawn

ABCD and *AEFG* are mathematically similar trapeziums.
AE = 5 cm
EF = 12 cm
BC = 18 cm

(a) Work out the length of *AB*.

.... cm

(2)

Trapezium *AEFG* has an area of 36 cm^2.

(b) Work out the area of the shaded region.

.... cm^2

(3)

(Total for Question is 5 marks)

Q3.

M

B

L

12 cm
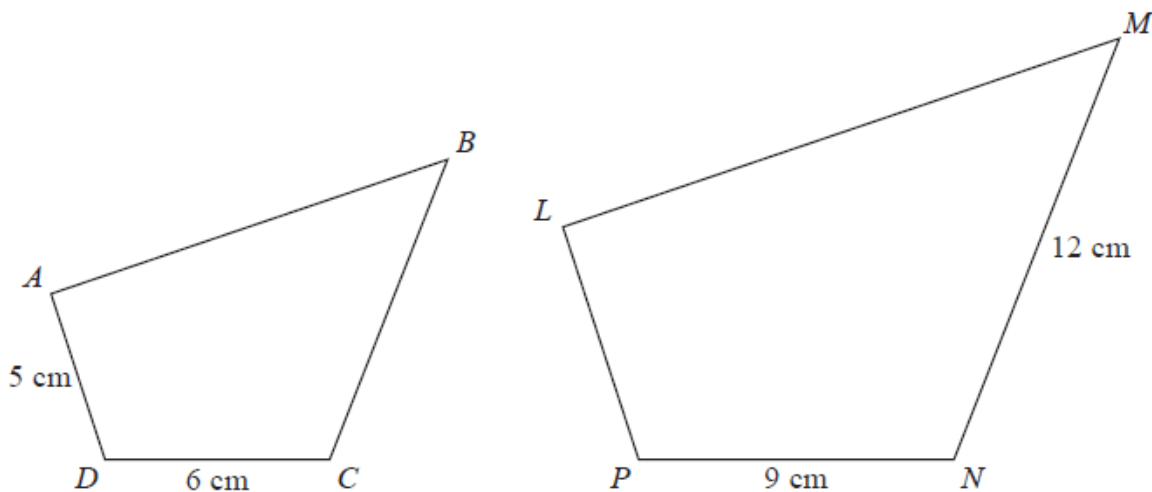
A

5 cm

D   6 cm   C   P   9 cm   N

Diagram **NOT** accurately drawn

Quadrilaterals *ABCD* and *LMNP* are mathematically similar.

Angle *A* = angle *L*
Angle *B* = angle *M*
Angle *C* = angle *N*
Angle *D* = angle *P*

(a) Work out the length of *LP*.

....cm

(2)

(b) Work out the length of *BC*.

....cm

(2)

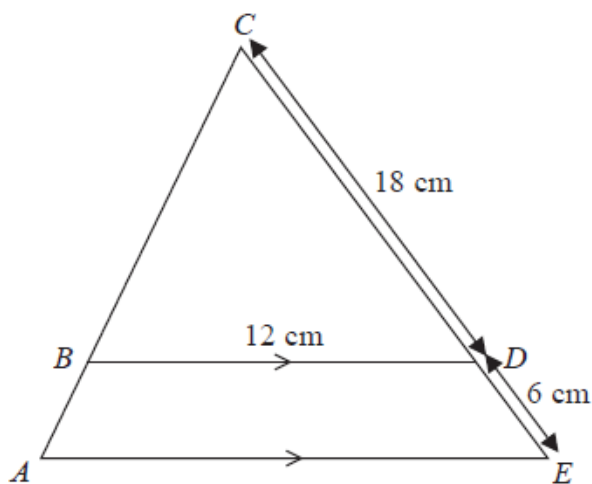**(Total for Question is 4 marks)**

Q4.

Diagram **NOT**
accurately drawn

ABC and *CDE* are straight lines.
BD and *AE* are parallel.
BD = 12 cm, *CD* = 18 cm, *DE* = 6 cm.

Work out the length of *AE*.

.... cm

(Total for question = 2 marks)

Q5.

Diagram **NOT** accurately drawn

B ← 1.5 cm → E

5 cm

C ← 6 cm → D
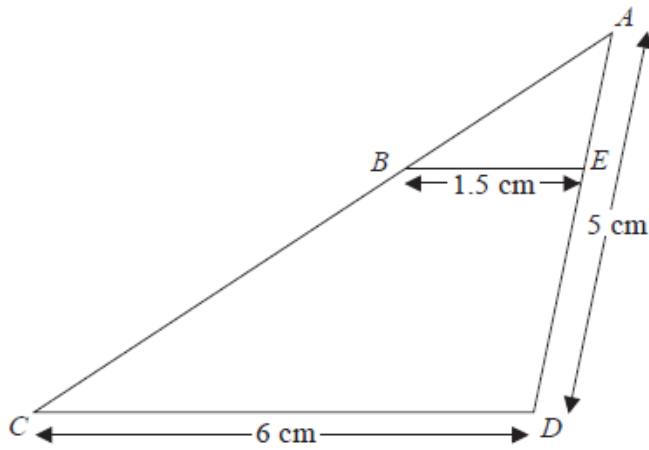
ABC and *AED* are straight lines.
BE and *CD* are parallel.
BE = 1.5 cm.
CD = 6 cm.
AD = 5 cm.

Calculate the length of *ED*.

.... cm

(Total for question = 3 marks)

Q6.

Diagram **NOT** accurately drawn

C

Area = 4 cm²

A   2(*x* – 1) cm   B

F

Area = *T* cm²

D   (*x*² – 1) cm   E
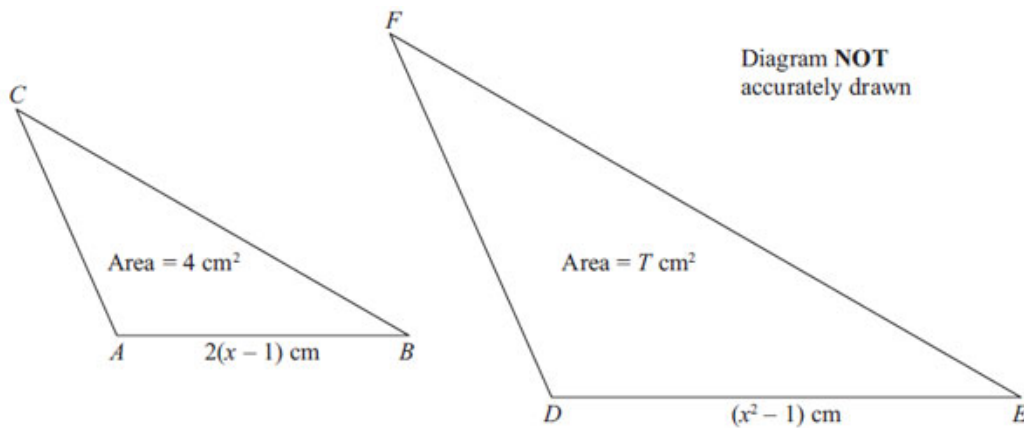
Triangles *ABC* and *DEF* are mathematically similar.

The base, *AB*, of triangle *ABC* has length 2(*x* – 1) cm
The base, *DE*, of triangle *DEF* has length (x^2 – 1) cm

The area of triangle *ABC* is 4 cm²
The area of triangle *DEF* is *T* cm²

Prove that

$T = x^2 + 2x + 1$

Q7.

ABC is a triangle.
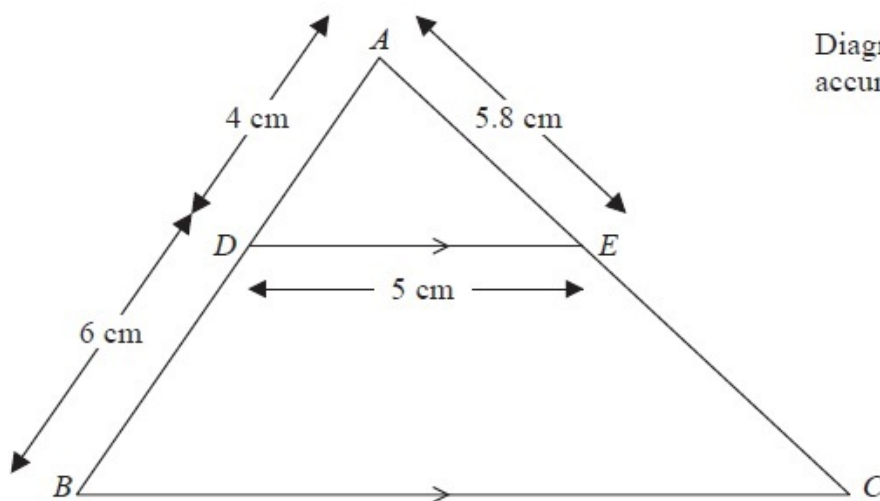
Diagram **NOT** accurately drawn

D is a point on *AB* and *E* is a point on *AC*.

DE is parallel to *BC*.

AD = 4 cm, *DB* = 6 cm, *DE* = 5 cm, *AE* = 5.8 cm.

Calculate the perimeter of the trapezium *DBCE*.

.... cm

(Total for Question is 4 marks)

Q8.

Steve has a photo and a rectangular piece of card.
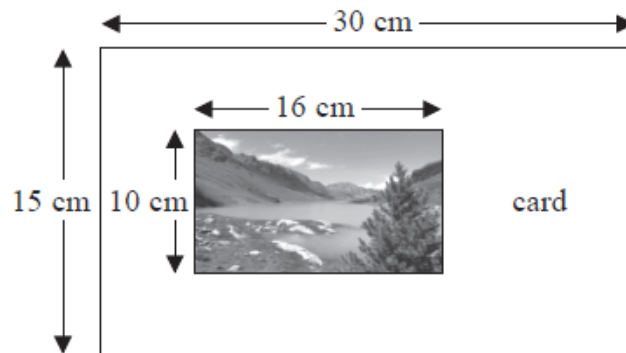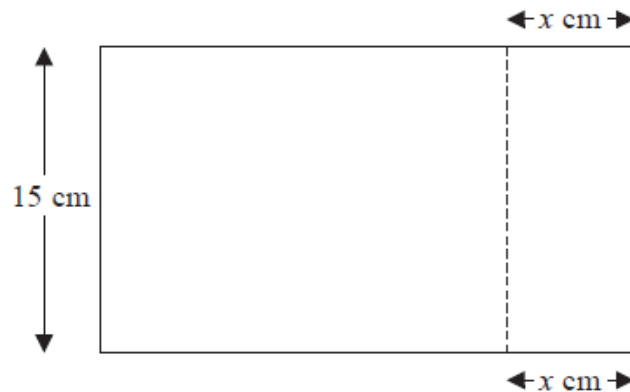

The photo is 16 cm by 10 cm.
The card is 30 cm by 15 cm.

Steve cuts the card along the dotted line shown in the diagram below.

Steve throws away the piece of card that is 15 cm by *x* cm.
The piece of card he has left is mathematically similar to the photo.

Work out the value of *x*.

....

(Total for Question is 3 marks)