

**Final Revision October Exam (Geometry)**

**1. Choose the correct answer:**

**1) Two similar polygons, the ratio between the lengths of two corresponding sides in them is  $2:3$  , if the perimeter of the smaller is  $14$  cm, then the perimeter of the bigger is \_\_\_\_ cm**

**a) 14**

**b) 28**

**c) 15**

**d) 21**

**2) Which of the following is always true?**

**a) All regular polygons are similar**

**b) All squares are congruent**

**c) All equilateral triangles are similar**

**d) All rhombuses are similar**

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3) If  $\triangle LMN \sim \triangle XYZ$ ,  $m(\angle L) = 35^\circ$  and  $m(\angle Z) = 75^\circ$ ,  
then  $m(\angle M) = \underline{\hspace{2cm}}$

a)  $110^\circ$

b)  $35^\circ$

c)  $75^\circ$

d)  $70^\circ$

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4) If  $k$  is the scale factor of similarity between two polygons  $M_1$  to  $M_2$  where  $M_1$  is reduction of polygon  $M_2$ , then \_\_\_\_\_

- a)  $k > 0$       b)  $k = 1$       c)  $k > 1$       d)  $0 < k < 1$

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- 5) *Two similar rectangles, the two dimensions of the first are 12 cm, 8 cm and the perimeter of the second is 60 cm, then the length of the second rectangle is \_\_*
- a) 12 cm      b) 18 cm      c) 24 cm      d) 16 cm

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6) In the opposite figure:

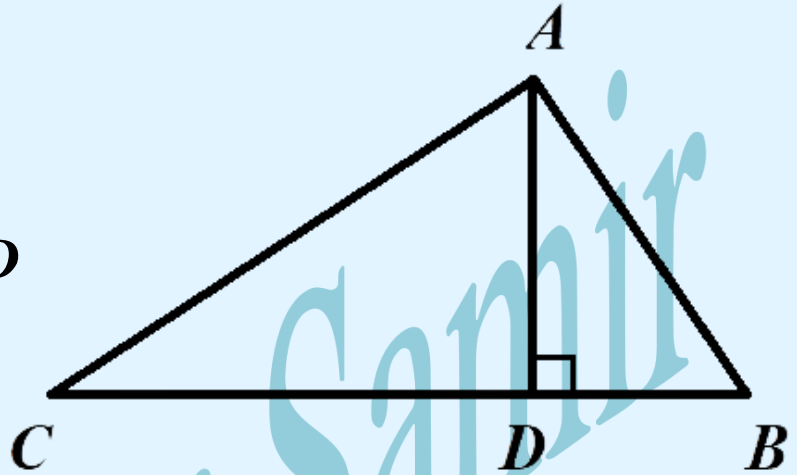
Which of the following expressions is wrong?

a)  $(AB)^2 = BD \times DC$

b)  $(AC)^2 = CD \times CB$

c)  $(AD)^2 = DB \times DC$

d)  $AB \times AC = BC \times AD$



7) In the opposite figure:

If  $\overrightarrow{CX}$  bisects  $\angle ACB$

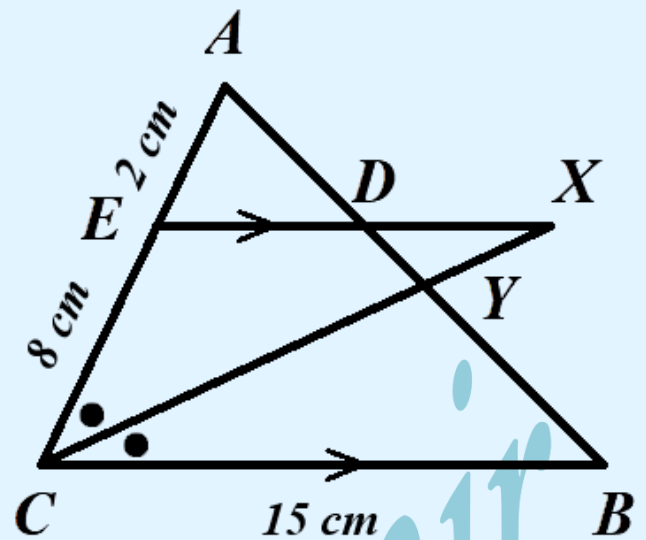
$\overrightarrow{XD} \parallel \overrightarrow{BC}$ , then  $XD = \underline{\hspace{1cm}} \text{ cm}$

a) 3

b) 4

c) 5

d) 6



8) In the opposite figure:

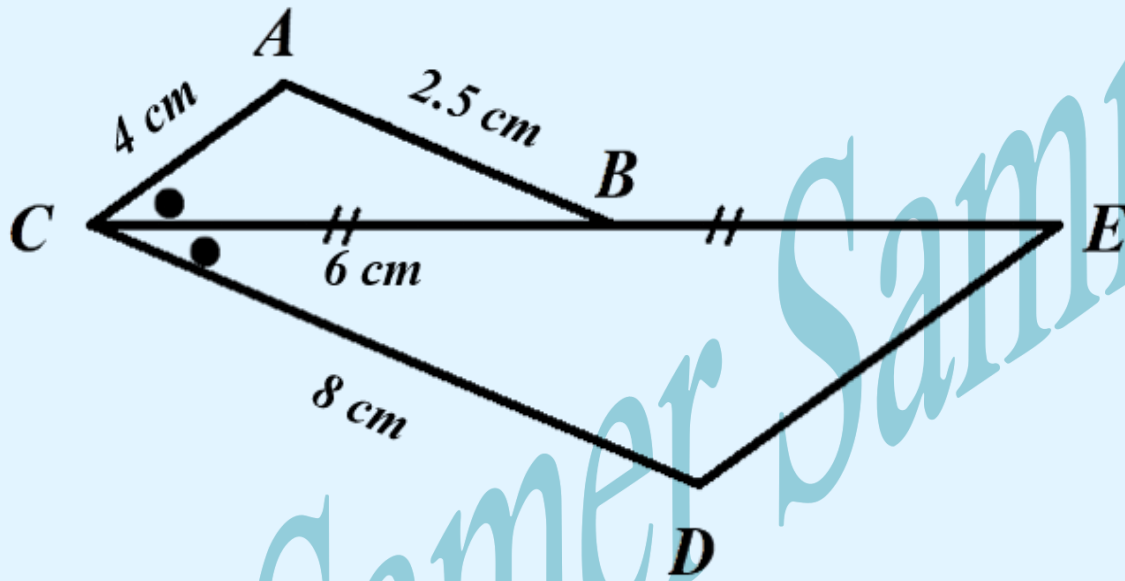
If  $B$  is the midpoint of  $\overline{CE}$ , then  $DE =$  \_\_\_\_\_ cm

a) 4

b) 5

c) 6

d) 7





9) *If the ratio between the perimeter of two similar polygons is 4:9 , then the ratio between their areas is*

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a) 4:9

b) 2:3

c) 16:81

d) 8:18

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10) In the opposite figure:

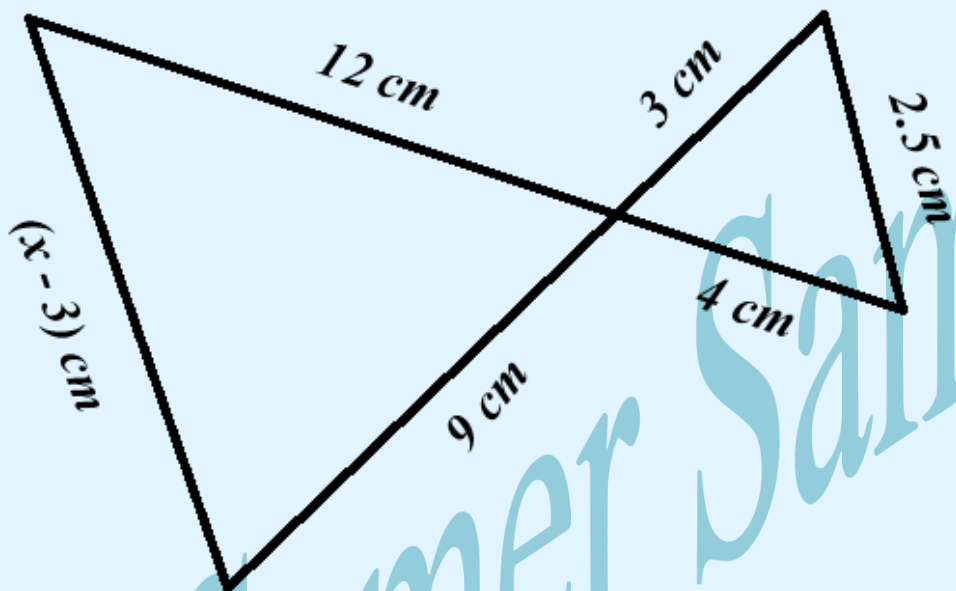
$x =$  \_\_\_\_\_

a)  $\frac{15}{2}$

b) 27

c) 14

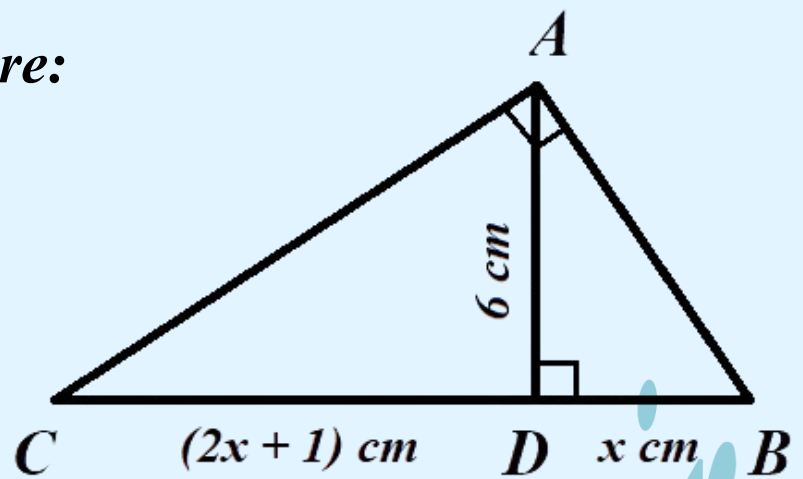
d)  $10\frac{1}{2}$



11) In the opposite figure:

$x =$  \_\_\_\_\_

- a) 4.5      b) 4  
c) 6      d) 36



12) In the opposite figure:

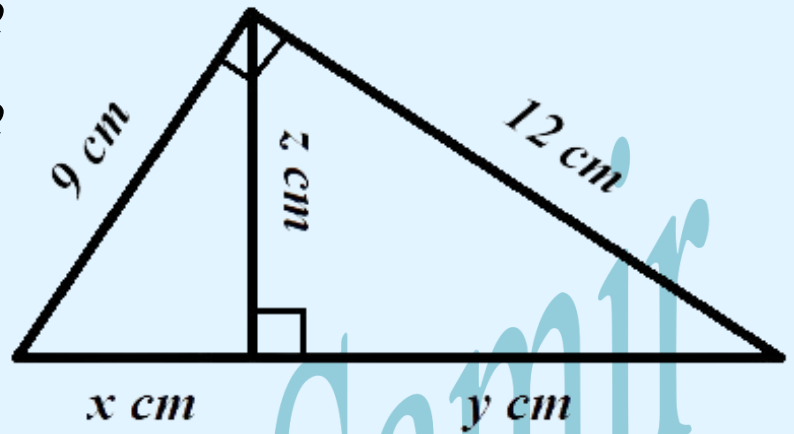
$$x + y + z = \underline{\hspace{2cm}}$$

a) 15

b) 18.2

c) 22

d) 22.2



13) If  $\triangle XYZ \sim \triangle ABC$ ,  $a(\triangle XYZ) = 3a(\triangle ABC)$  and  $xy = 3 \text{ cm}$ , then  $AB = \underline{\hspace{2cm}} \text{ cm}$

a)  $\sqrt{3}$

b)  $3\sqrt{3}$

c)  $\frac{1}{\sqrt{3}}$

d) 3

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14) If  $\triangle ABC \sim \triangle XYZ$  and  $AB = 3XY$ , then

$$\frac{a(\triangle XYZ)}{a(\triangle ABC)} = \underline{\hspace{2cm}}$$

a) 3

b) 9

c)  $\frac{1}{3}$

d)  $\frac{1}{9}$

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15) In the opposite figure:

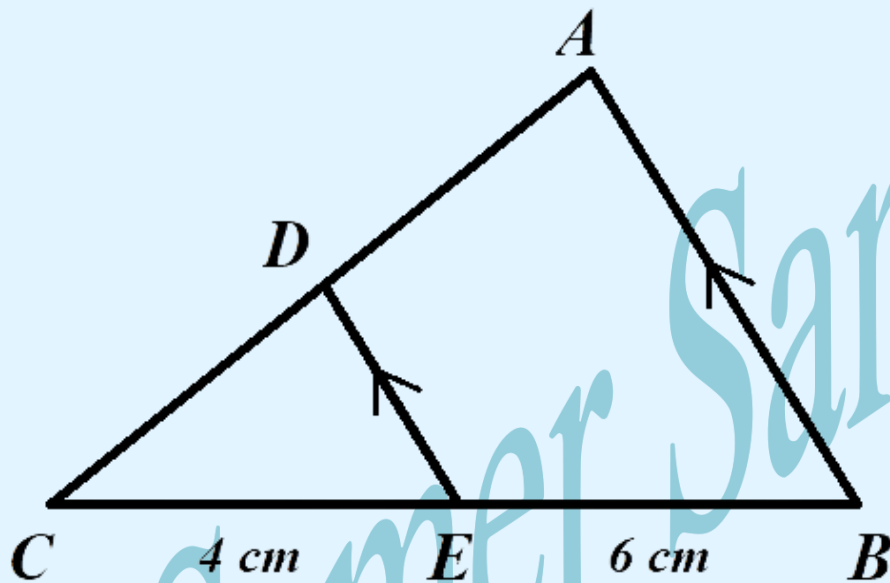
If the area of the figure  $ABED = 42 \text{ cm}^2$  then the area of  $\triangle CED = \underline{\hspace{2cm}} \text{ cm}^2$

a) 8

b) 12

c) 16

d) 20



16) In the opposite figure:

$\overline{DE} \parallel \overline{BC}$ ,  $AE = 3 \text{ cm}$ ,  $EC = 4 \text{ cm}$ ,  $DE = 6 \text{ cm}$ , then

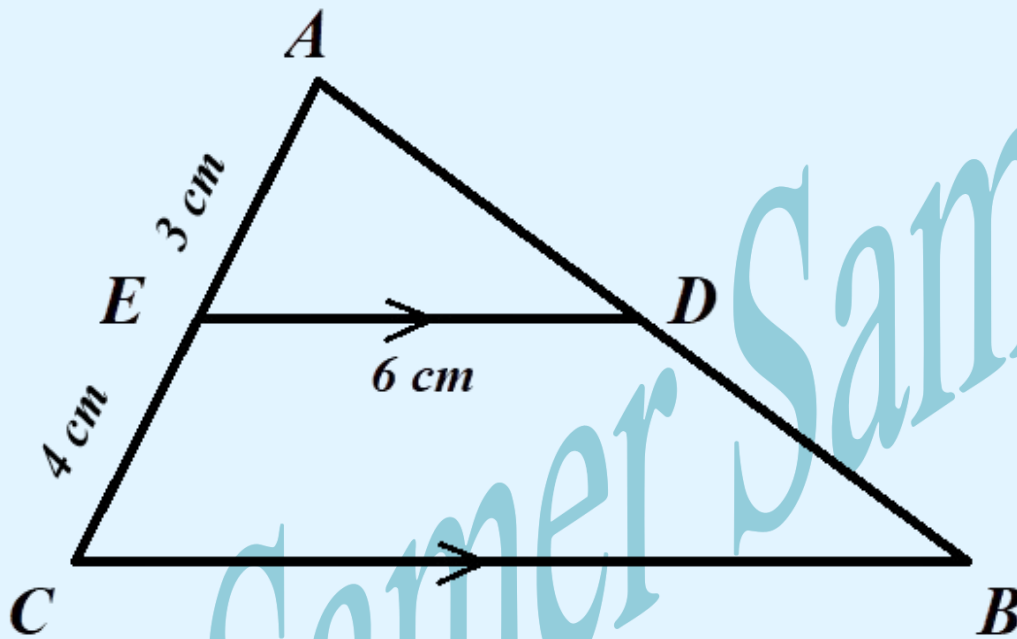
$BC = \underline{\hspace{2cm}} \text{ cm}$

a) 14

b) 12

c) 21

d) 8





17) If polygon  $ABCD \sim$  polygon  $XYZL$  and  $AB = 32$  cm  
 $BC = 40$  cm ,  $XY = 3m - 1$  ,  $YZ = 3m + 1$  , then  $m =$  \_

a) 3

b) 2

c) 1

d) 4

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18) In the opposite figure:

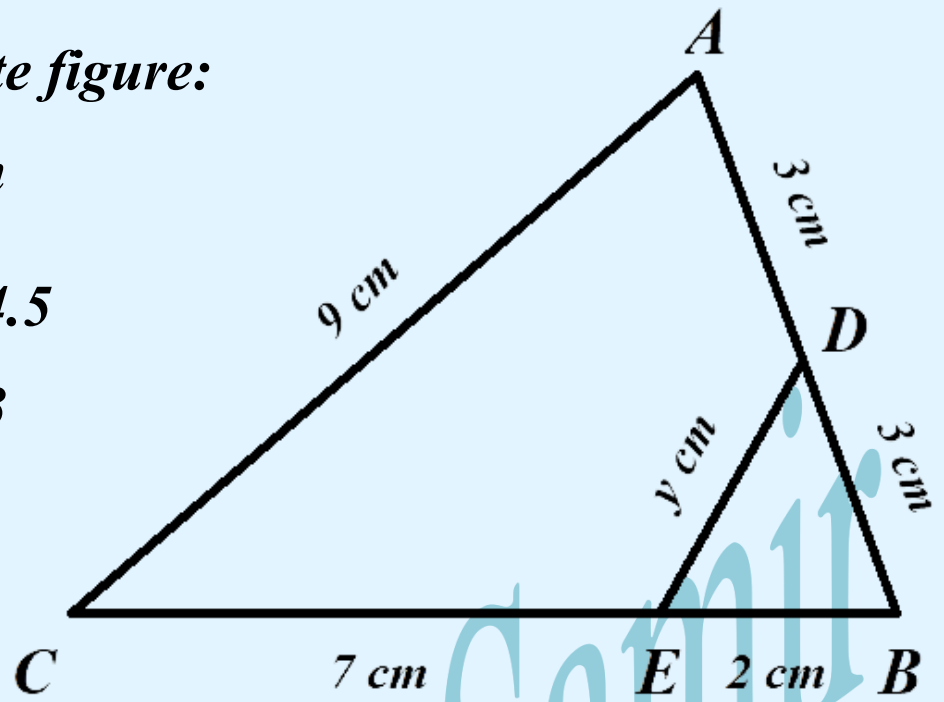
$y =$  \_\_\_\_\_ cm

a) 2

b) 4.5

c) 3.5

d) 3



19) In the opposite figure:

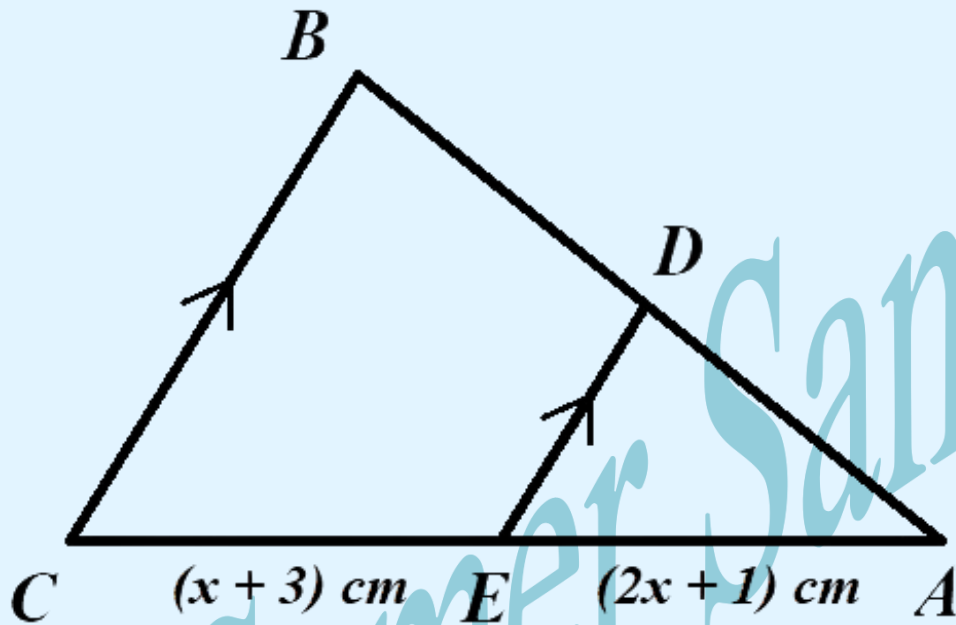
If  $AD:AB = 3:5$  ,  $\overline{DE} \parallel \overline{BC}$ , then  $x =$  \_\_\_\_\_ cm

a) 5

b) 3

c) 4

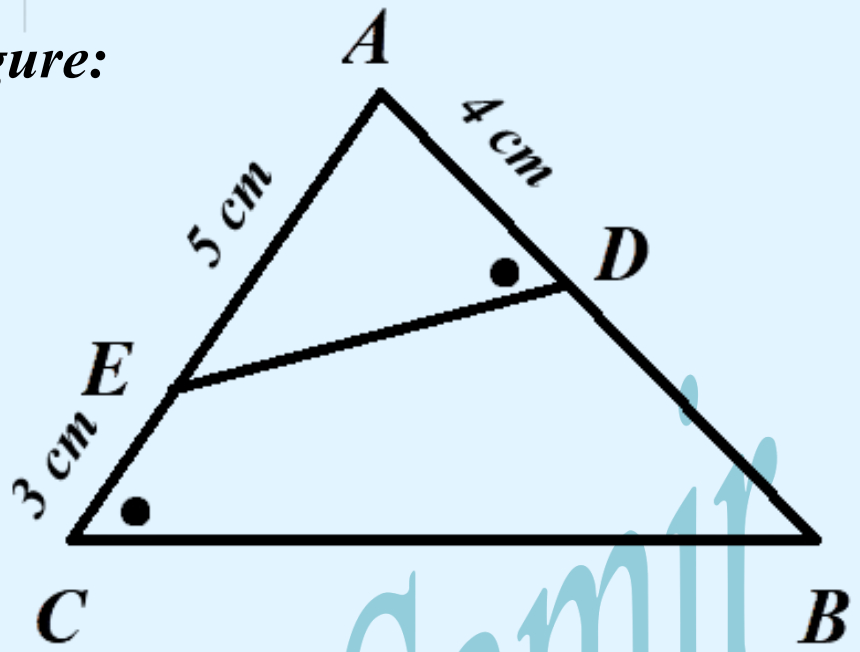
d) 7



20) In the opposite figure:

$BD = \underline{\hspace{2cm}} \text{ cm}$

- a) 5                      b) 6  
c) 4                      d) 7



21) In the opposite figure:

$ABC$  is a right-angled triangle at  $A$ ,  $\overline{AD} \perp \overline{BC}$

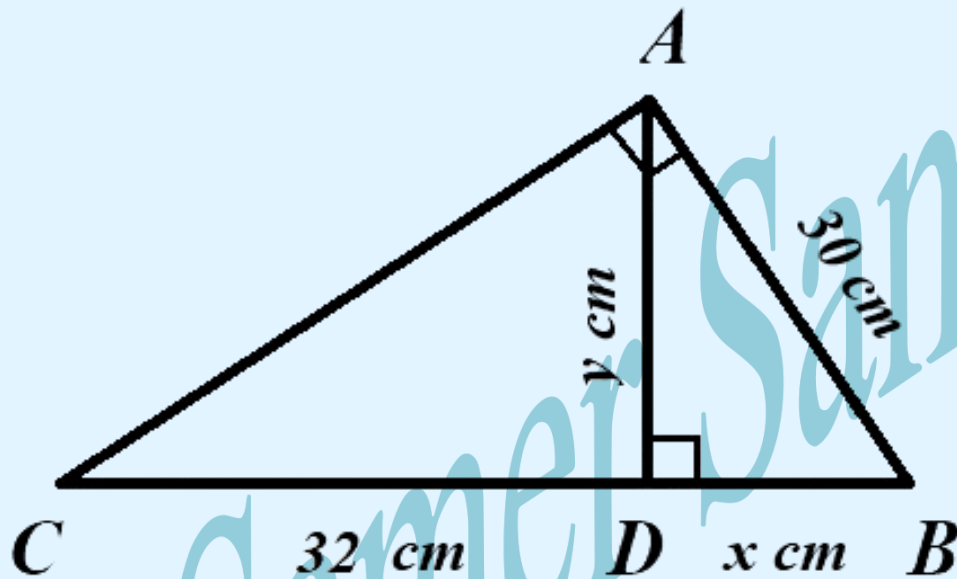
$AB = 30 \text{ cm}$ ,  $DC = 32 \text{ cm}$ , then  $x + y =$  \_\_\_\_\_  $\text{cm}$

a) 36

b) 48

c) 42

d) 52

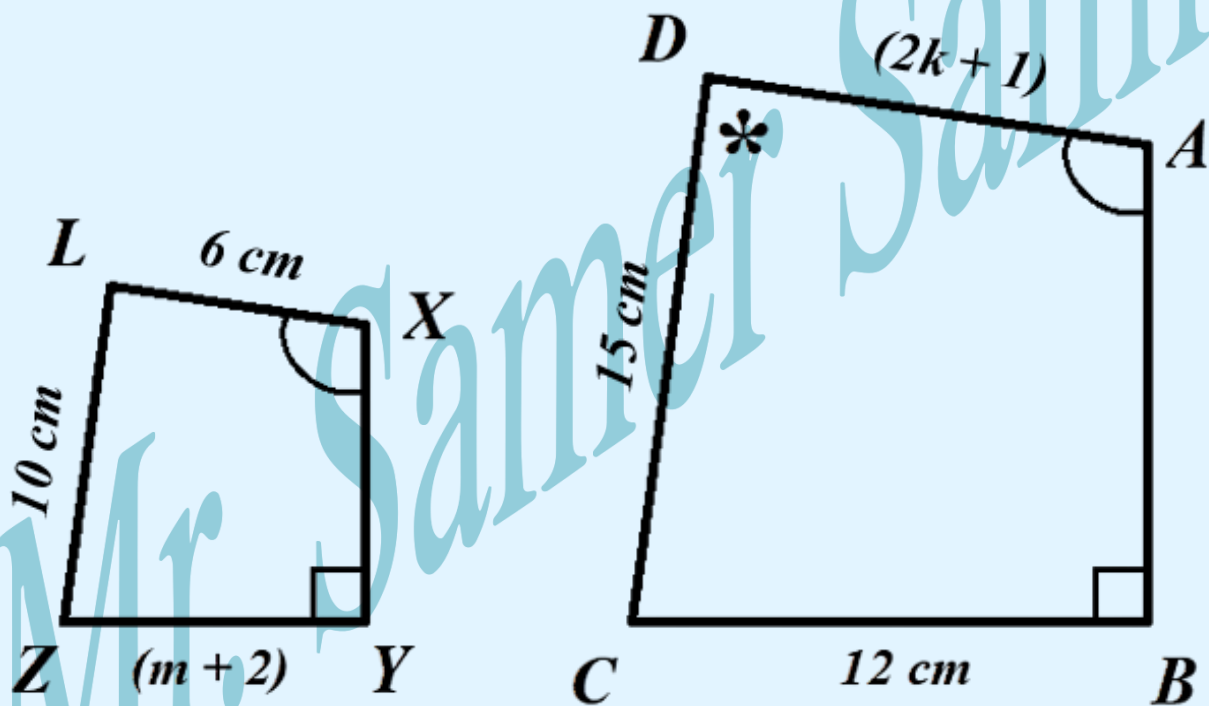


2. Answer the following essay questions:

1) In the opposite figure:

*Polygon ABCD ~ XYZL:*

- Find the scale factor of similarity between the polygon ABCD and the polygon XYZL
- Find the value of each of:  $m$  ,  $k$



2) In the opposite figure:

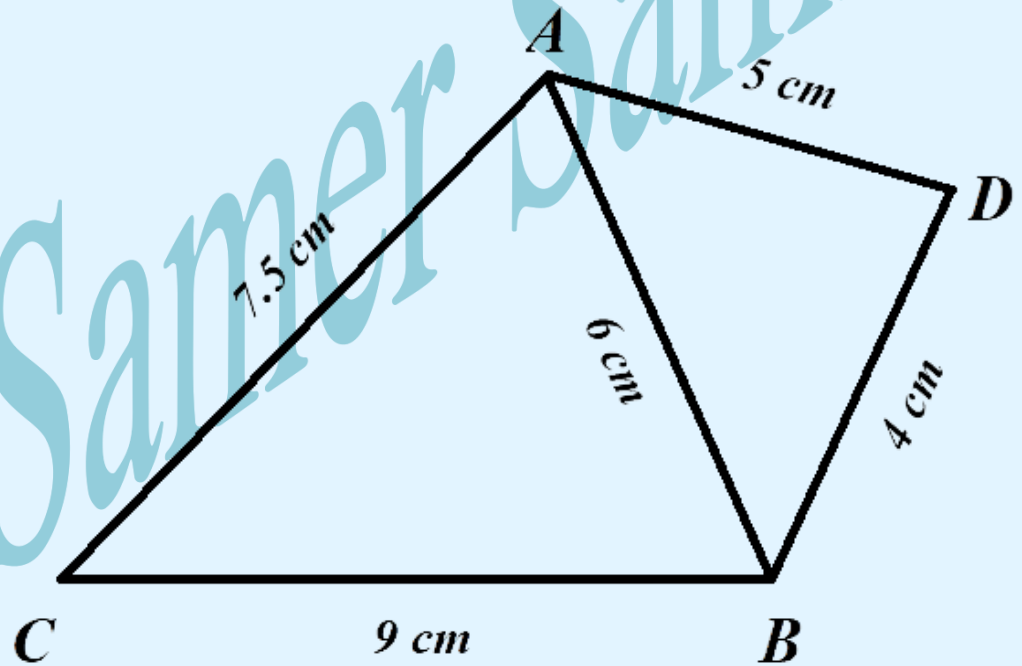
$ABC$  is a triangle in which:

$AB = 6\text{ cm}$  ,  $BC = 9\text{ cm}$  ,  $AC = 7.5\text{ cm}$ ,  $D$  is a point outside the triangle  $ABC$  where

$DB = 4\text{ cm}$  ,  $DA = 5\text{ cm}$ . Prove that:

a)  $\triangle ABC \sim \triangle DBA$

b)  $\overrightarrow{BA}$  bisects  $\angle DBC$



3)  $\overline{AB}$  ,  $\overline{DC}$  two chords in a circle,  $\overrightarrow{AB} \cap \overrightarrow{CD} = \{E\}$  ,  
 where  $E$  outside the circle,  $AB = 4 \text{ cm}$  ,  $DC = 7 \text{ cm}$  ,  
 $BE = 6 \text{ cm}$  . Prove that:  $\triangle ADE \sim \triangle CBE$  , then find  
 length of  $\overline{CE}$

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4)  $ABC$  is a triangle,  $AB = 8 \text{ cm}$ ,  $AC = 10 \text{ cm}$

$BC = 12 \text{ cm}$ ,  $E \in \overline{AB}$ , where  $AE = 2 \text{ cm}$ ,  $D \in \overline{BC}$ ,

where  $BD = 4 \text{ cm}$ , Prove that:

a)  $\triangle BDE \sim \triangle BAC$  and deduce that length of  $\overline{DE}$

b) The figure  $ACDE$  is a cyclic quadrilateral

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***5) The ratio between the two perimeters of two similar triangles is 3:2 and the sum of their areas is  $130 \text{ cm}^2$ . Find the area of each of them***

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