MATHS

BOOKS - VGS BRILLIANT MATHS (TELUGU ENGLISH)

SIMILAR TRIANGLES

Examples

1. In ΔABC, $DE \| BC$ and $\frac{AD}{DB} = \frac{3}{5}$' AC=5.6. Find AE.

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2. In the given figure , $LM \mid\mid AB$ AL=x-3, AC=2x,BM=x-2 and BC=2x+3, find the value of x.

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3. The diagonals of a quadrilateral ABCD intersect each other at point'O' such that $\frac{AO}{BO} = \frac{CO}{DO}$. Prove that ABCD is a trapezium.

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4. In trapezium ABCD, $AB \mid\mid DC$. E and F are points on non-parallel sides AD and BC respectively such that $EF \mid\mid AB$.

Show that $\frac{AE}{ED} = \frac{BF}{FC}$.

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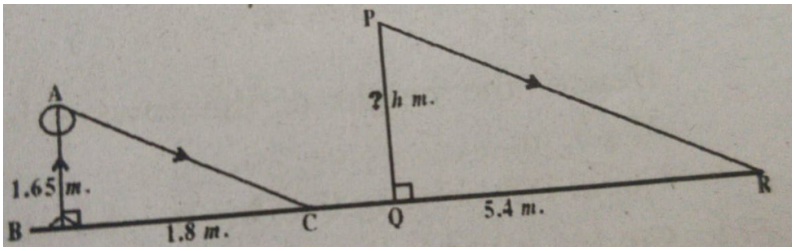
5. A Person 1.65 m m tall casts 1.8 m shadow. AT the same instance, a lamp post casts a shadow of 5.4 m. Find the height of the lamp-post.



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6. A man sees the top of a tower in a mirror which is at a distance of 87.6 m from the tower. The mirror is on the ground facing upwards. The man is 0.4 m away from the mirror and his height is 1.5 m. How tall is the tower?

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7. Gopal is worrying that his neighbour can peep into his living room from the top floor of his house. He has decided to build a fence that is high enough to block the view from their top floor window. What should be

the height of the fence? The measurements are given in the figure.

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8. Prove that if the area of two similar triangles are equal, then they are congruent.

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9. $\Delta ABC \sim \Delta DEF$ and their areas are respectively 64 cm^2 and 121 cm^2. IF EF=15.4 cm., then find BC.

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10. Diagonals of a trapezium ABCD with $AB \mid\mid DC$. Intersect each other at the point 'O'. IF AB=2CD, find the ratio of areas of triangles AOB and COD.

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11. A folder 25 m long reaches a window of building 20 m above the ground. Determine the distance of the foot of the ladder from the building.

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12. BL and CM are medians of a triangle ABC right angled at A. Prove that $4\left(BL^2+CM^2\right)=5BC^2$.

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13. O' is any point inside a rectangle ABCD.

Prove that $OB^2+OD^2=OA^2+OC^2$

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14. The hypotenuse of a right Triangle is 6 m more than twice of the shortest side. IF the third side is 2 m,

less than the hypotenuse, find the sides of the Triangle.

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15. ABC is a right Triangle right angled at C. Let BC=a,CA=b,AB=c and let p be the length of the perpendicular fromt C on AB Prove that pc=ab

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16. ABC is a right Triangle right angled at C. Let BC=a,CA=b,AB=c and let p be the length of the

perpendicular fromt C on AB Prove that $\frac{1}{p^2} = \frac{1}{a^2} + \frac{1}{b^2}$.

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Try This

1. E and F are points on the sides PQ and PR respectively of ΔPQR. For each of the following state whether $EF \| QR$ or not?

PE=3.9 cm ,EQ=3cm,

PF=3.6 cm and FR=2.4 cm.

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2. E and F are points on the sides PQ and PR respectively of ΔPQR. For each of the following state whether $EF \mid\mid QR$ or not?

PE=4cm,QE=4.5cm,

PF=8 cm and RF=9cm.

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3. E and F are points on the sides PQ and PR respectively of ΔPQR. For each of the following state whether $EF \mid\mid QR$ or not?

PF=1.28 cm, FR=2.56 cm,

PE=1.8 cm and EQ=3.6 cm.

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4. In the following figure $DE \| BC$.

Find EC.

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5. In the following figure $DE \| BC$.

Find AD.

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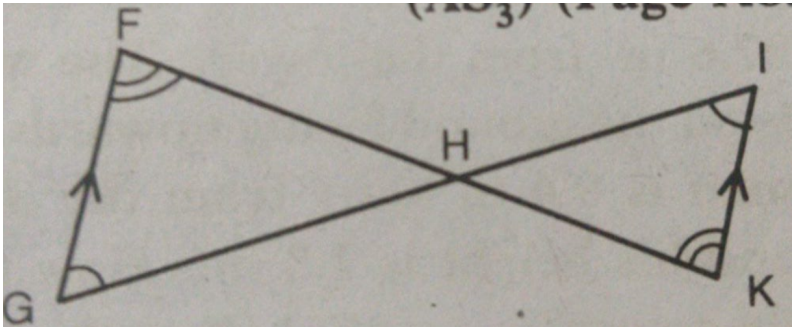
6. Area the triangle similar? IF so, name the criterion of similarity. Write the similarity relation in symbolic form.



!! $\angle G = \angle I$ alt.int.angles for the $\angle F = \angle K$ parallel lines $GF \,||\, KI$

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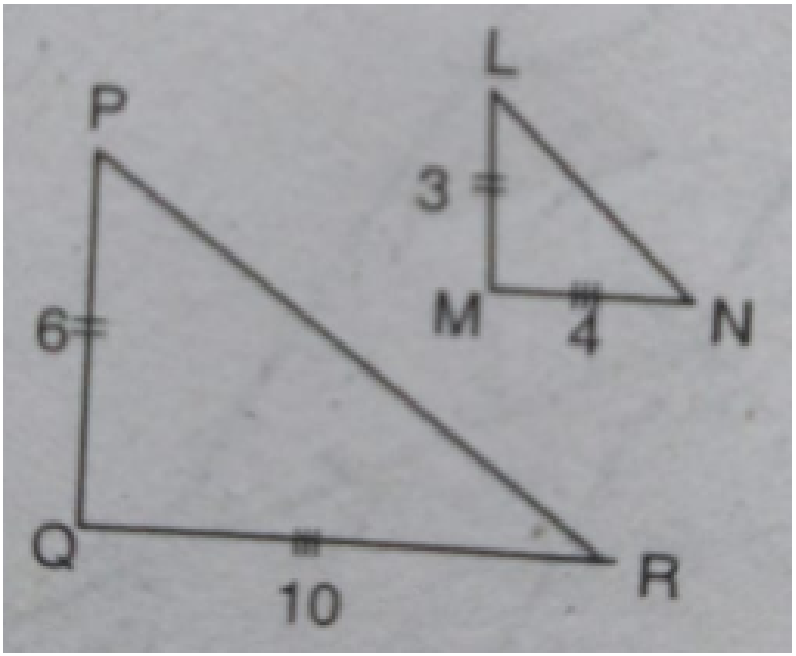
7. Area the triangle similar? IF so, name the criterion of similarity. Write the similarity relation in symbolic

form.



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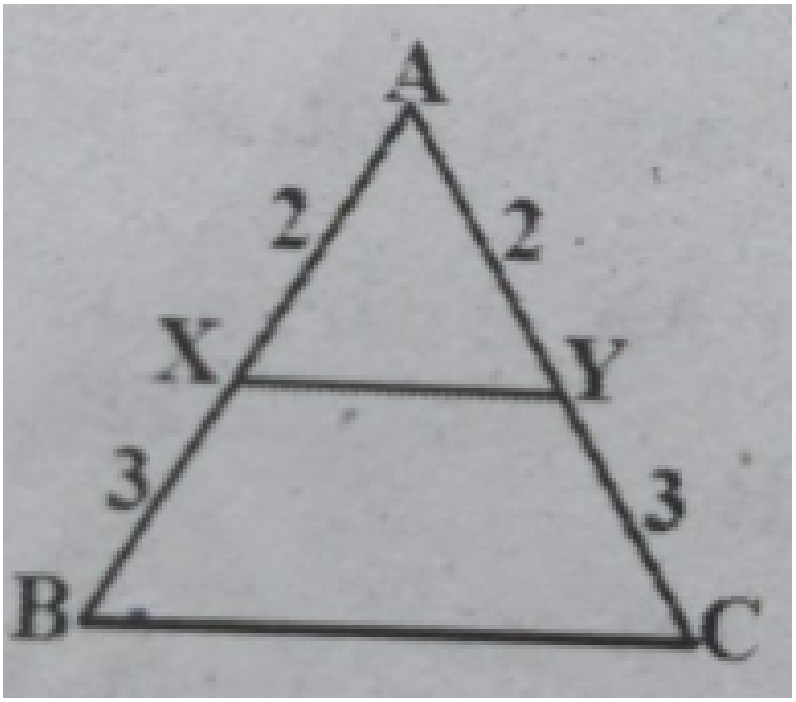

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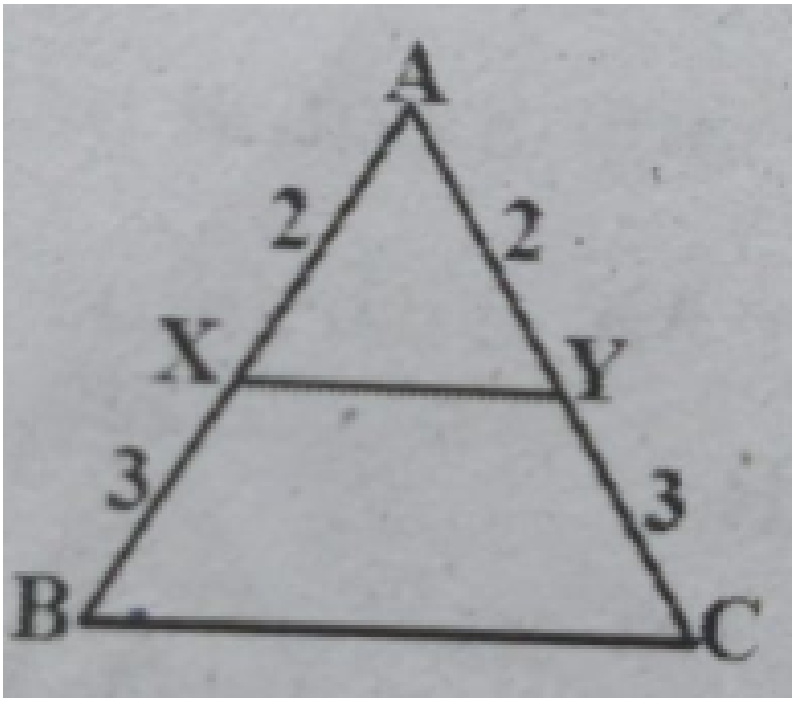

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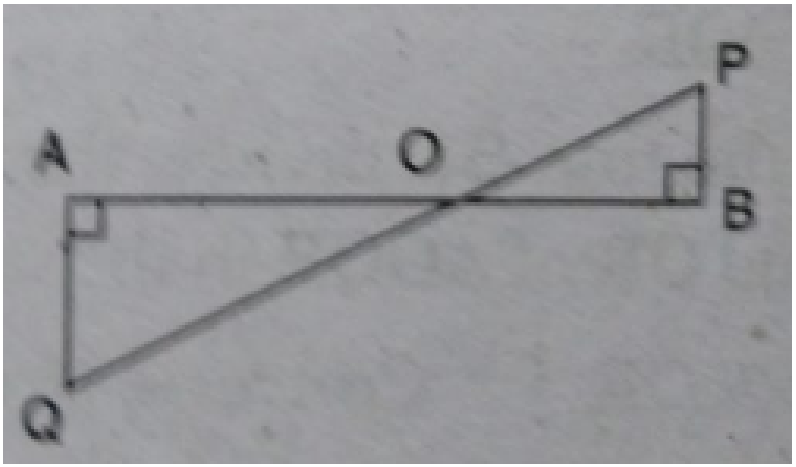
form.



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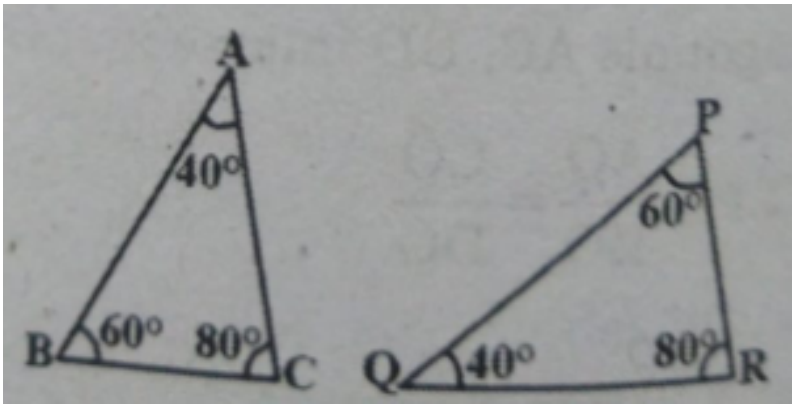
11. Area the triangle similar? IF so, name the criterion of similarity. Write the similarity relation in symbolic

form.



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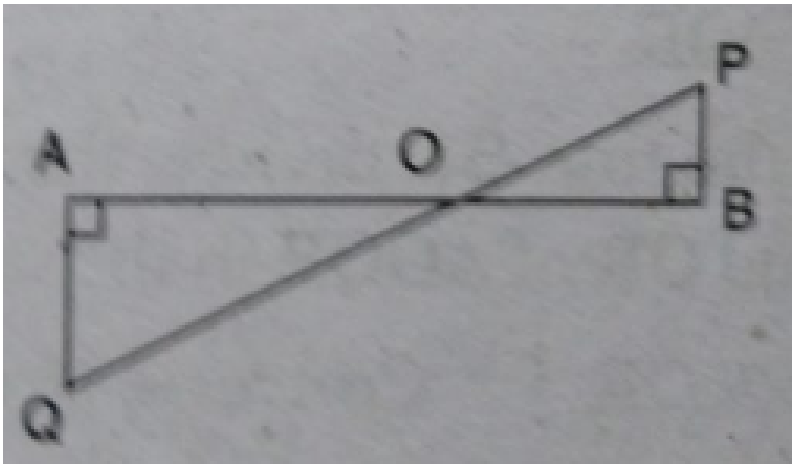
12. Area the triangle similar? IF so, name the criterion of similarity. Write the similarity relation in symbolic

form.



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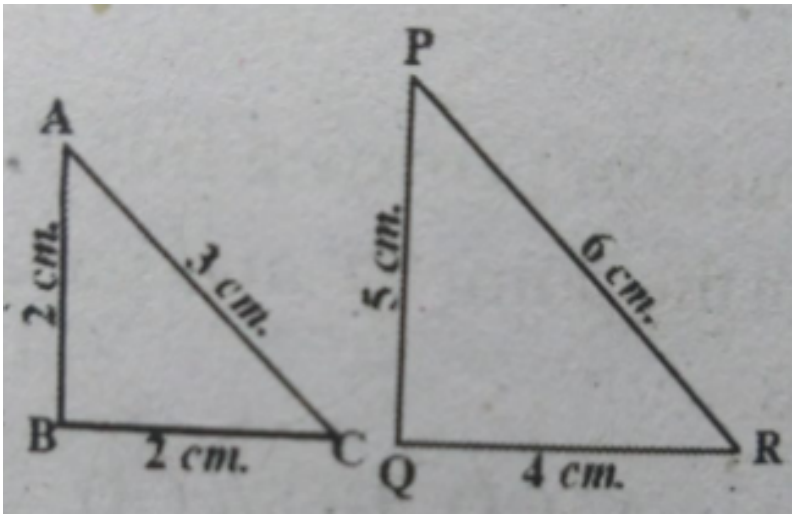

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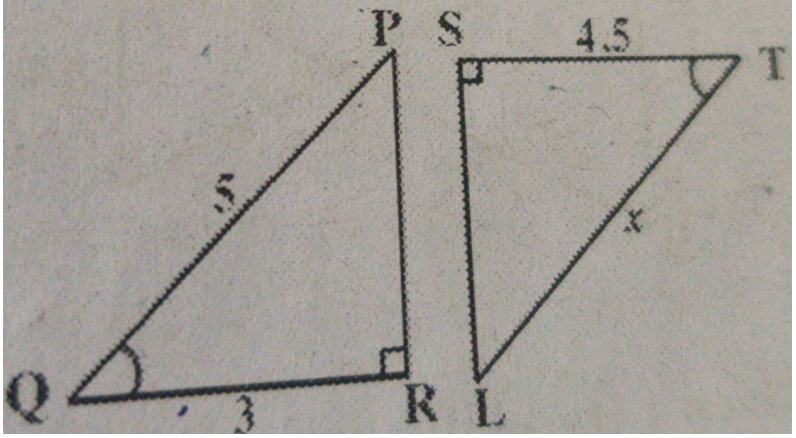
14. Explain why the triangle are similar and then find the value of x.



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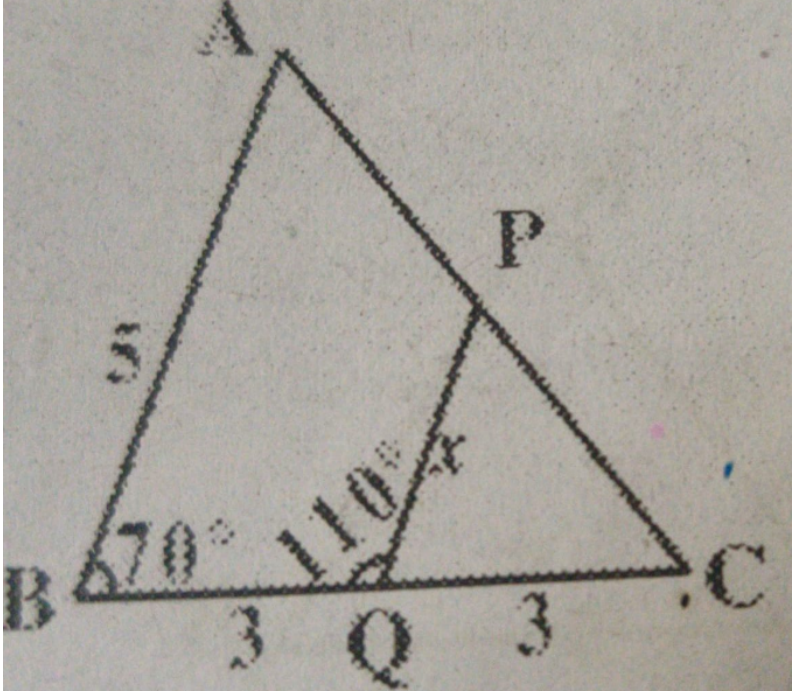

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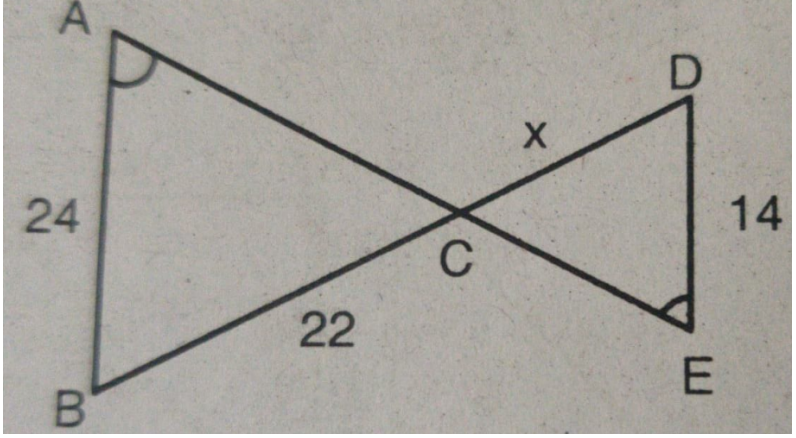
16. Explain why the triangle are similar and then find the value of x.



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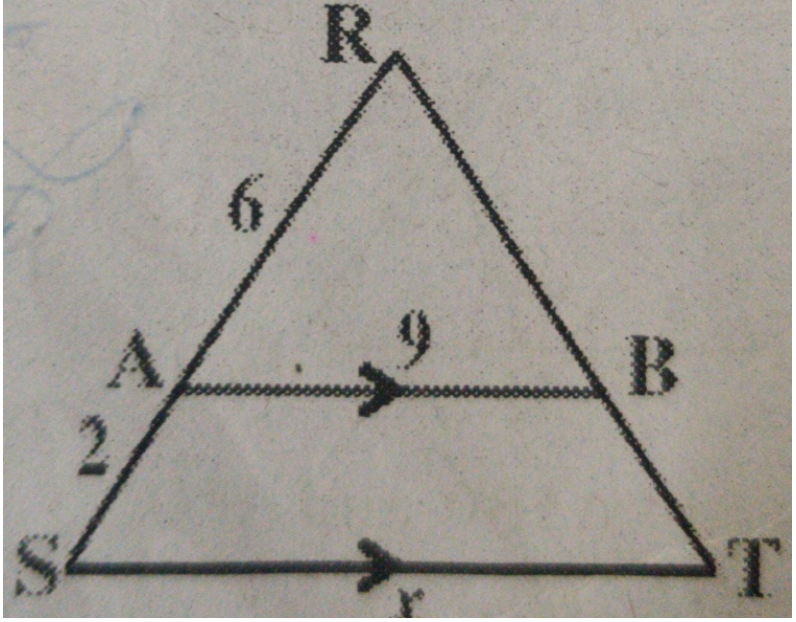
17. Explain why the triangle are similar and then find the value of x.



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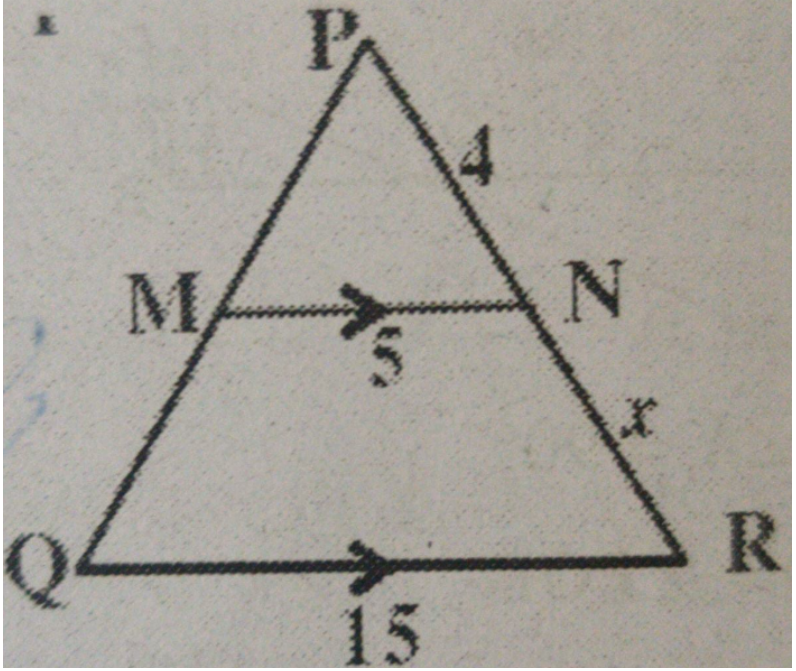
18. Explain why the triangle are similar and then find the value of x.



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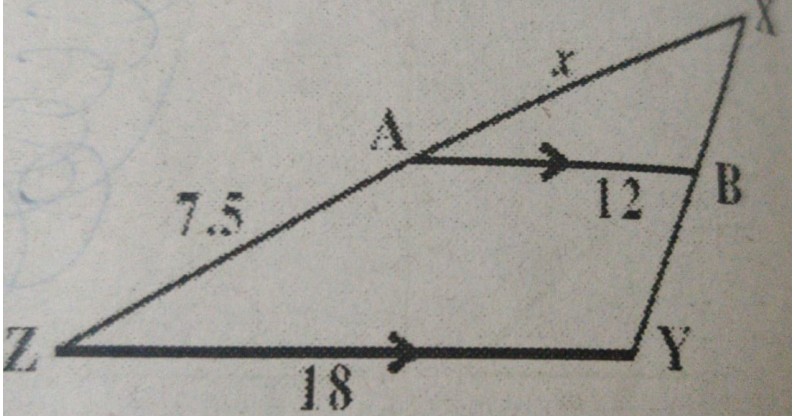
19. Explain why the triangle are similar and then find the value of x.



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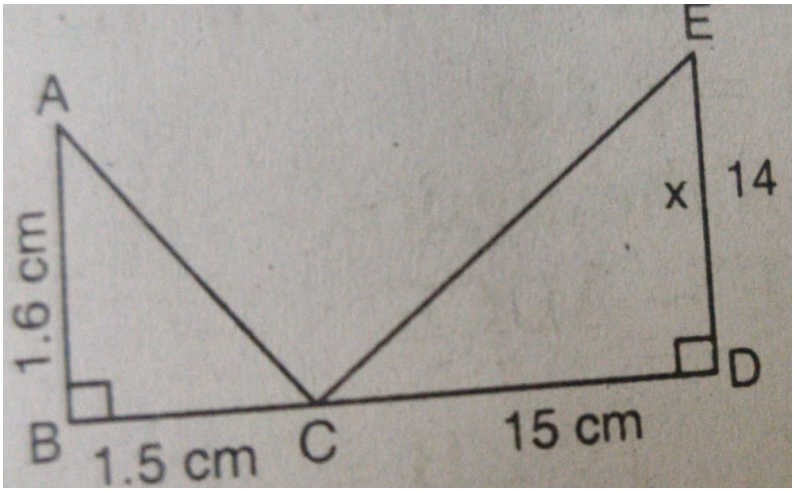
20. Explain why the triangle are similar and then find the value of x.



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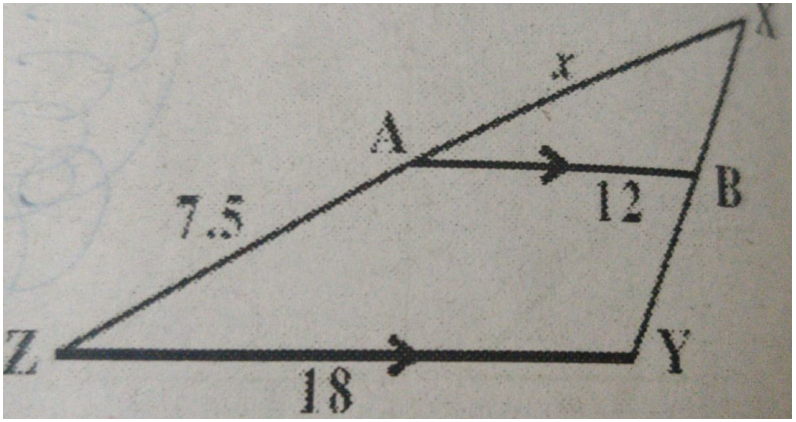
21. Explain why the triangle are similar and then find the value of x.



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Exercise 8 1

1. In ΔPQR,ST is a line such that $\frac{PS}{SQ} = \frac{PT}{TR}$ and also $\angle PST = \angle PRQ$. Prove that ΔPQR is an isosceles Triangle.

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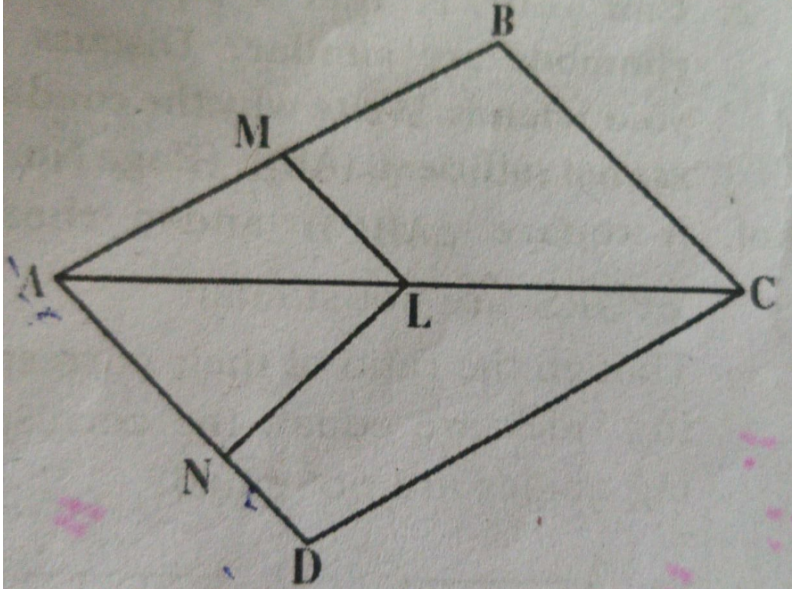
2. In the given figure,$LM \| CB$ and $LN \| CD$,Prove that $\frac{AM}{AB} = \frac{AN}{AD}$.



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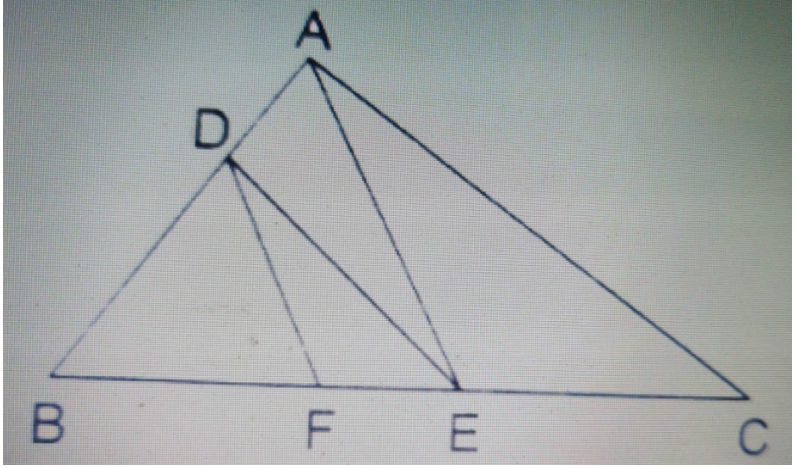
3. In the given figure, $DE \| AC$ and $DF \| AE$. Prove that $\frac{BF}{FE} = \frac{BE}{EC}$.



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4. Prove that a line drawn through the mid-point of one side of a Triangle parallel to another side bisects the third side (Using Basic proportionality theorem).

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5. Prove that a line joining the mid points of any two sides of a Triangle is parallel to the third side. (Using Converse of Basis Proportionality theorem)

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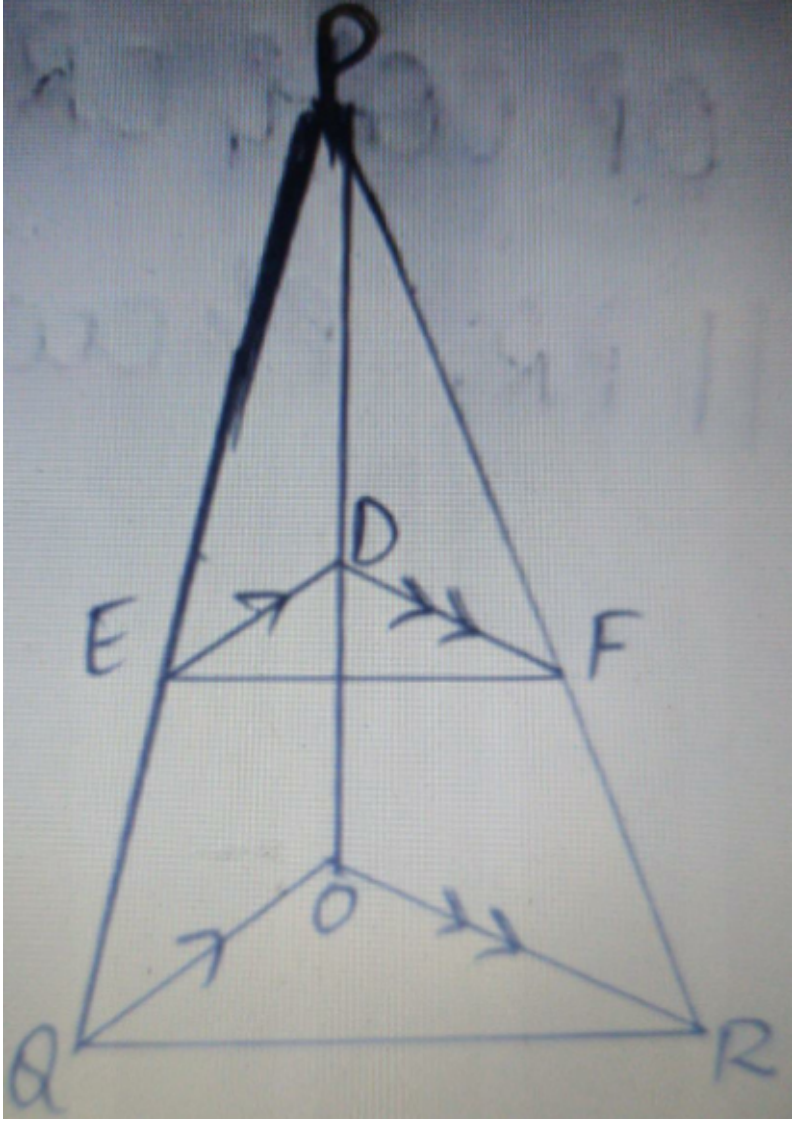
6. In the given figure , $DE \| OQ$ and $DF \| OR$. Show that $EF \| QR$.



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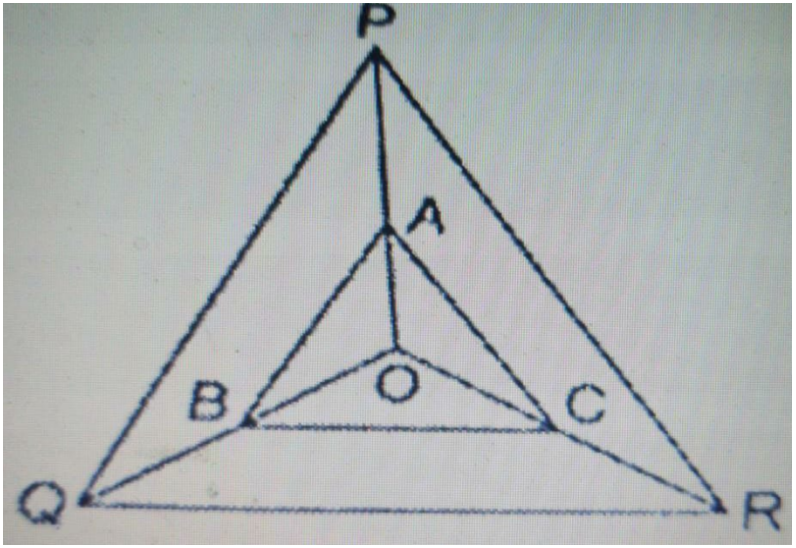
7. In the given figure A,B and C are points are OP,OQ and OR respectively such that $AB \| PQ$ and $AC \| PR$. Show that $BC \| QR$.



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8. ABCD is a trapezium in which $AB \| DC$ and its diagonal intersect each other at point 'O'. Show that

$\frac{AO}{BO} = \frac{CO}{DO}$.

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9. Draw a line segment of length 7.2 cm and divide it in the ratio 5:3 .Measure the two parts.

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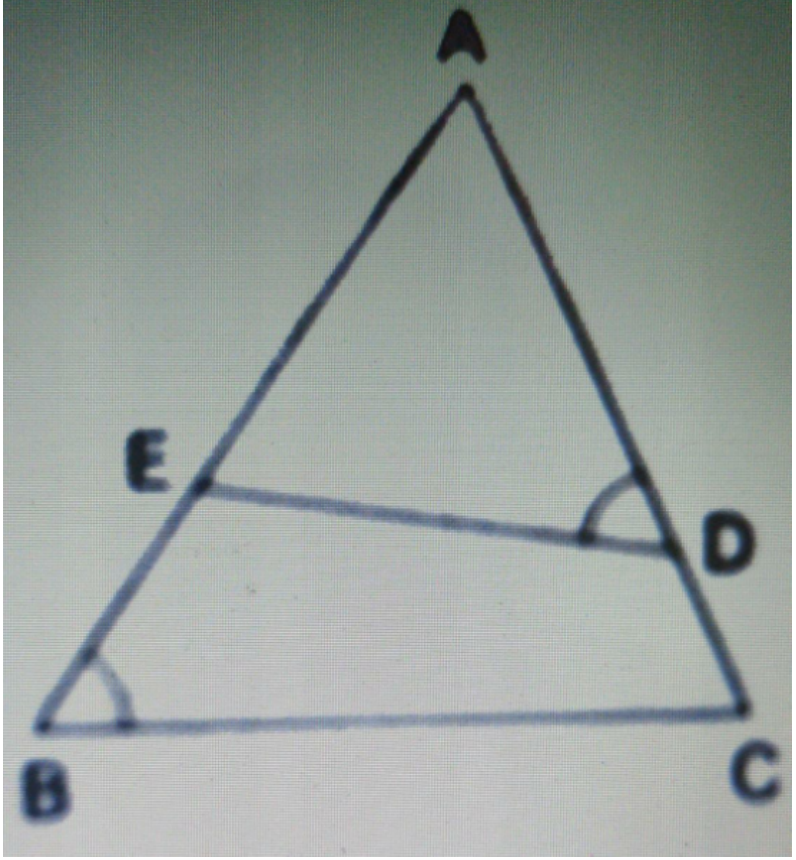
Exercise 8 2

1. In the given figure $\angle ADE = \angle B$

Show that $\Delta ABC \sim \Delta ADE$.



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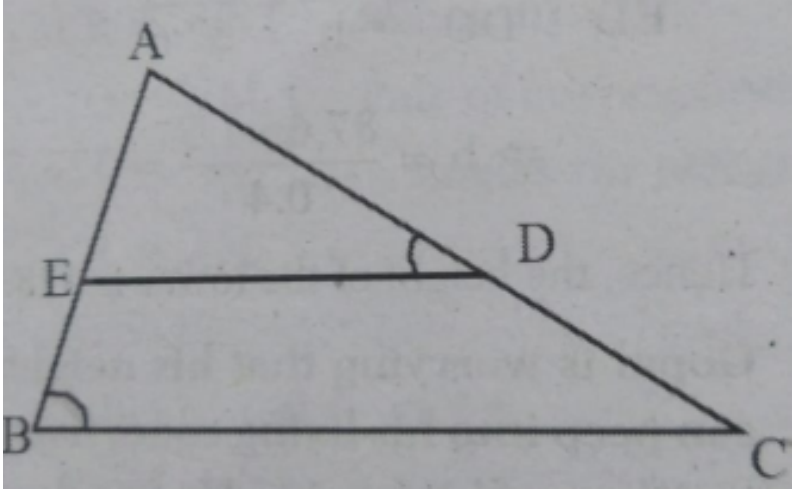
2. In the given figure $\angle ADE = \angle B$

IF AD=3.8 cm, AE=3.6 cm, BE=2.1 cm, BC=4.2 cm, find DE.



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3. The perimeters of two similar triangle are 30 cm and 20 cm respectively. IF one side of the first Triangle is 12 cm. determine the corresponding side of the second Triangle.

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4. A girl of height 90 cm is walking away from the base of a lamp-post at a speed of $1.2m/\sec$. IF the lamp-post is 3.6 m above the ground, find the length of her shadow after 4seconds.

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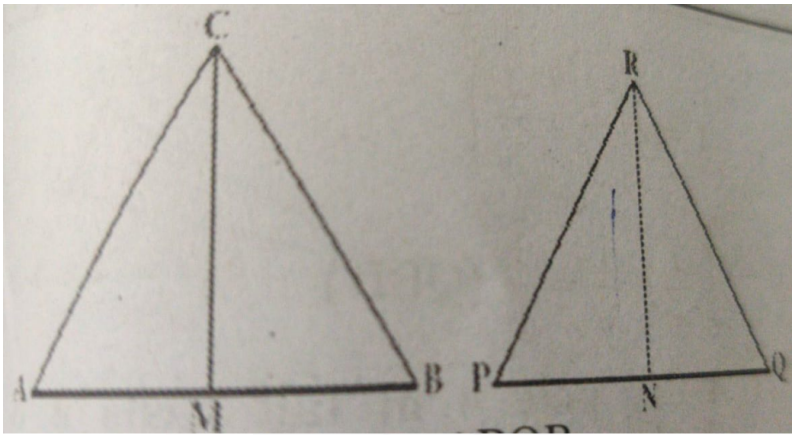
5. CM and RN are respectively the medians of similar triangle ΔABC and ΔPQR. Prove that

$\Delta AMC \sim \Delta PNR$



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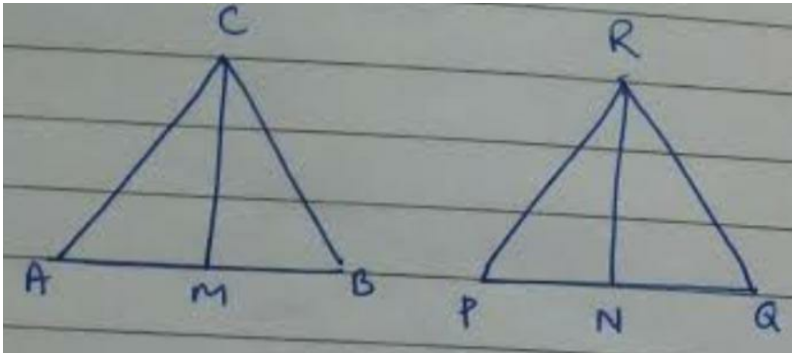
6. CM and RN are respectively the medians of similar triangle ΔABC and ΔPQR. Prove that

$$\frac{CM}{RN} = \frac{AB}{PQ}$$



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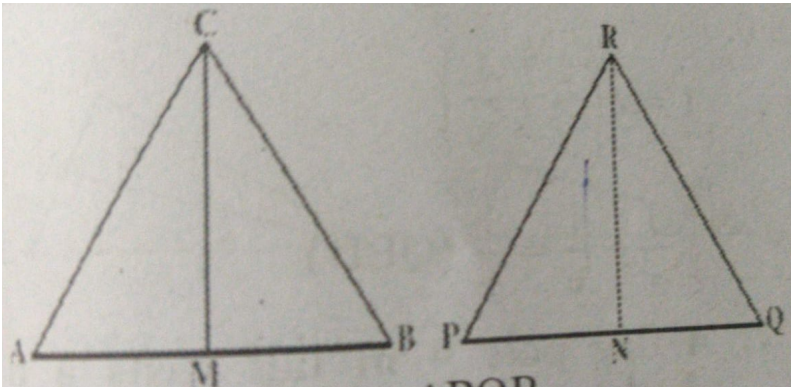

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8. Diagonals AC and BD of a trapezium ABCD with $AB \| DC$ intersect each other at the point 'O'.Using the criterion of similarity for two tri-angles , show that $\frac{OA}{OC} = \frac{OB}{OD}$.

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9. AB,CD,PQ are perpendicular to BD. AB=x. CD=y and PQ=z, prove that $\frac{1}{x}+\frac{1}{y}=\frac{1}{z}$.

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10. A flag pole 4 cm tall casts a 6m, shadow. At the same time , a nearby building casts a shadow of 24 m. How tall is the building?

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11. CD and GH are respectively the bisectors of $\angle ACB$ and $\angle EGF$ such that D and H lie on sides AB and FE

of ΔABC and ΔFEG respectively. IF $\Delta ABC \sim \Delta FEG$ then show that

$$\frac{CD}{GH} = \frac{AC}{FG}$$

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12. CD and GH are respectively the bisectors of $\angle ACB$ and $\angle EGF$ such that D and H lie on sides AB and FE of ΔABC and ΔFEG respectively. IF $\Delta ABC \sim \Delta FEG$ then show that

$\Delta DCB \sim \Delta HGE$

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13. CD and GH are respectively the bisectors of $\angle ACB$ and $\angle EGF$ such that D and H lie on sides AB and FE of ΔABC and ΔFEG respectively. IF $\Delta ABC \sim \Delta FEG$ then show that $\Delta DCA \sim \Delta HGF$

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14. AX and DY are altitudes of two similar triangle ΔABC and ΔDEF. Prove that $AX : DY = AB : DE$

.

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15. Construct a Triangle shadow similar on the given ΔABC, with its sides equal to $\frac{5}{3}$ of the corresponding sides of the triangle ABC.

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16. Construct a Triangle of sides 4 cm, 5 cm and 6cm. Then, construct a Triangle similar to it, whose sides are $2/3$ of the corresponding sides of the first Triangle.

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17. Construct is an isosceles Triangle whise base is 8 cm and altitude is 4 cm, Then, draw another Triangle whose sides are $1^1/2$ times the corresponding sides of the isosceles Triangle.

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Exercise 8 3

1. Equilateral triangle are drawn on the three sides of a right angled Triangle. Show that the area of the Triangle on the hypotenuse is equal to the sum of the areas of triangle on the other two sides.

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2. Prove that the area of the equilateral Triangle described on the side of a square is half the area of the equilateral triangle described on its diagonal.

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3. D,E,F are midpoints of sides BC,CA,AB of ΔABC. Find the ratio of areas of ΔDEF and ΔABC.

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4. In ΔABC $XY \mid\mid AC$ and XY divides the Triangle into two parts of equal area. Find the ratio of $\frac{AX}{XB}$.

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5. Prove that the ratio of areas of two similar triangle is equal to the square of the ratio of their corresponding medians.

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6. $\Delta ABC \sim \Delta DEF$,BC=3cm, EF=4cm and area of ΔABC= 54cm^2. Determine the area of ΔABC.

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7. ABC is a Triangle and PQ is a straight line meeting AB in P and AC in Q. IF AP=1 cm and BP= 3cm, AQ=1..5 cm, CQ=4.5 cm. Prove that area of $\Delta APQ = \frac{1}{16}$ (area of ΔABC).

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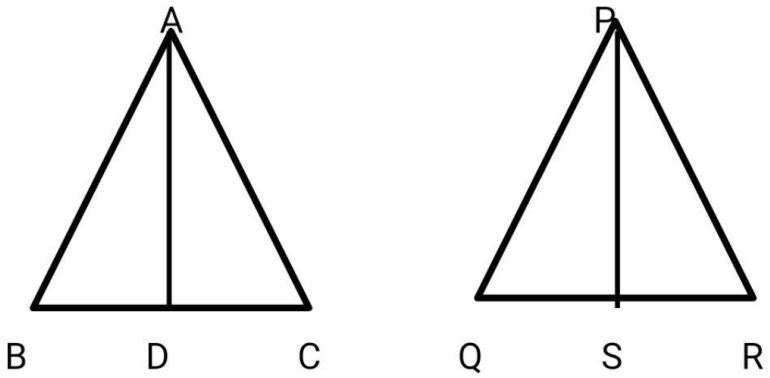
8. The areas of two similar triangle are $81cm^2$ and $49cm^2$ respectively. IF the altitude of the bigger Triangle is 4.5 cm. Find the corresponding altitude of

the smaller Triangle.



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Exercise 8 4

1. Prove that the sum of the squares of the sides of a rhombus is equal to the sum of the squares of its diagonals.

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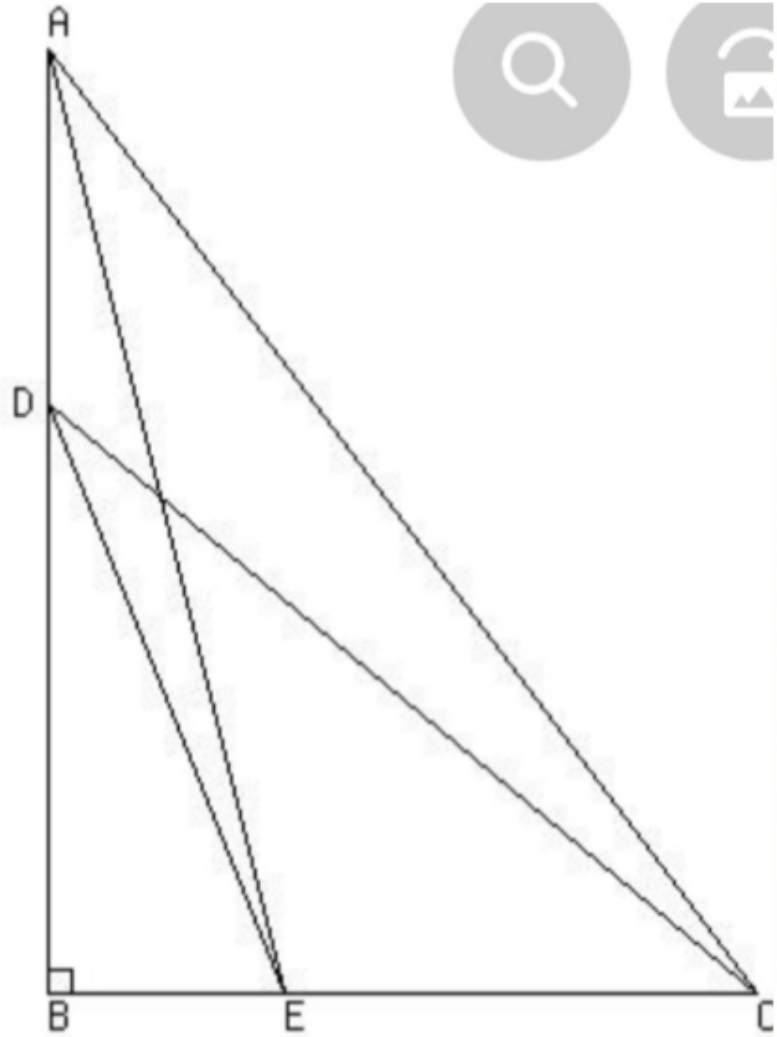
2. ABC is a right Triangle right angled at B.Let D and E be any points on AB and BC respectively. Prove that

$AE^2 + CD^2 = AC^2 + DE^2.$



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3. Prove that three times the square of any side of an equilateral Triangle is equal to four times the square of the altitude.

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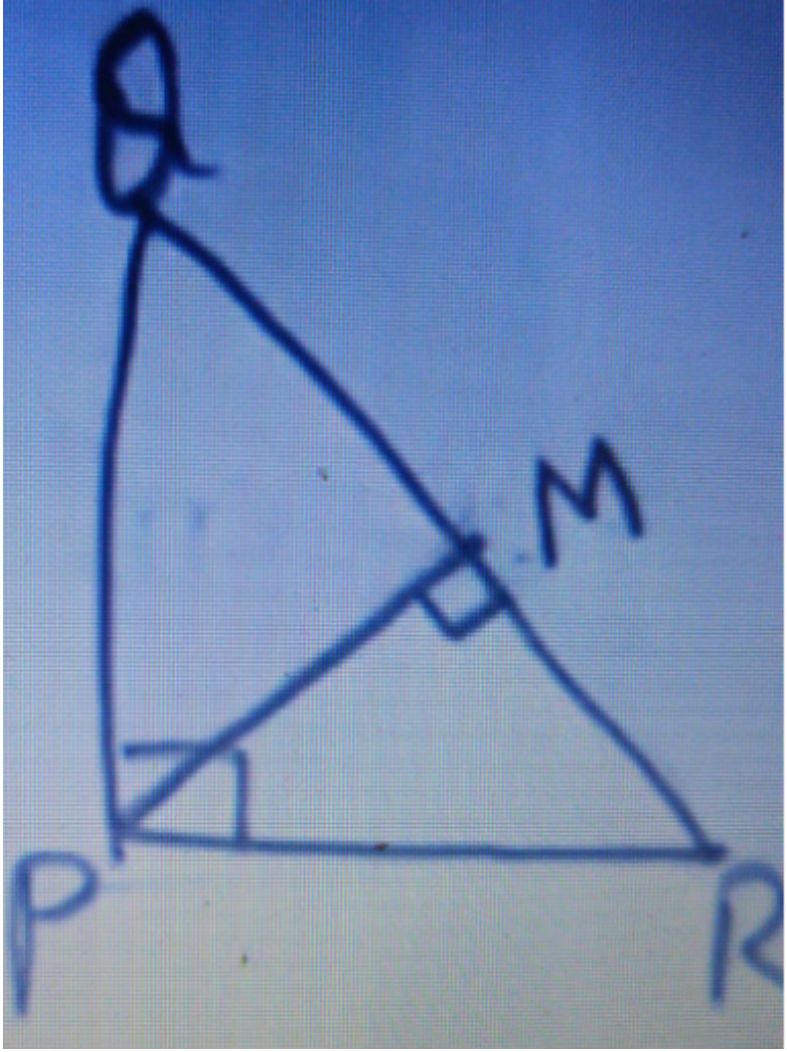
4. PQR is a Triangle right angled at P and M is a point on QR such that $PM \perp QR$. Show that PM^2=QM.MR.



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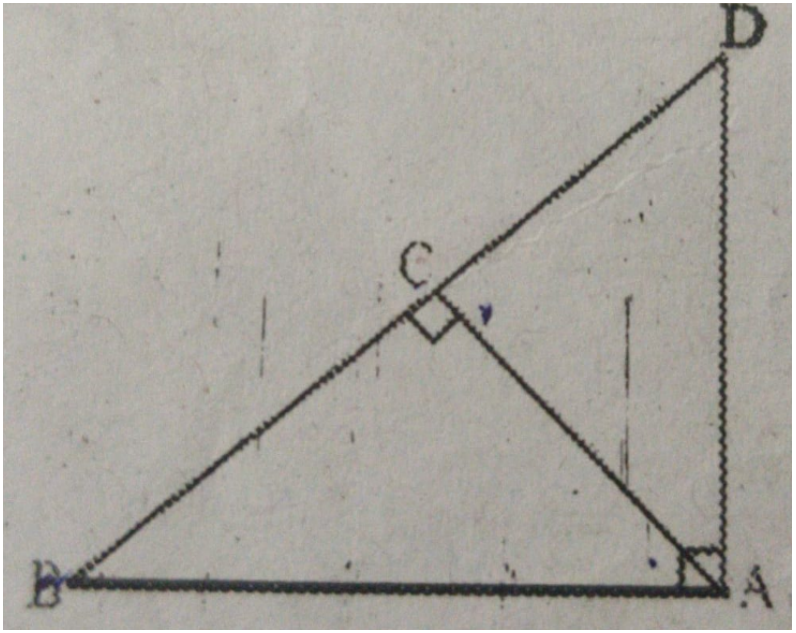
5. ABD is a Triangle right angle at A and $AC \perp BD$.

Show that (i) $AB^2 = BC.\ BD$

(ii) $AD^2 = BD.\ CD$

(iii) $AC^2 = BC.\ DC$



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6. ABC is an isosceles Triangle right angled at C. Prove that $AB^2 = 2AC^2$.

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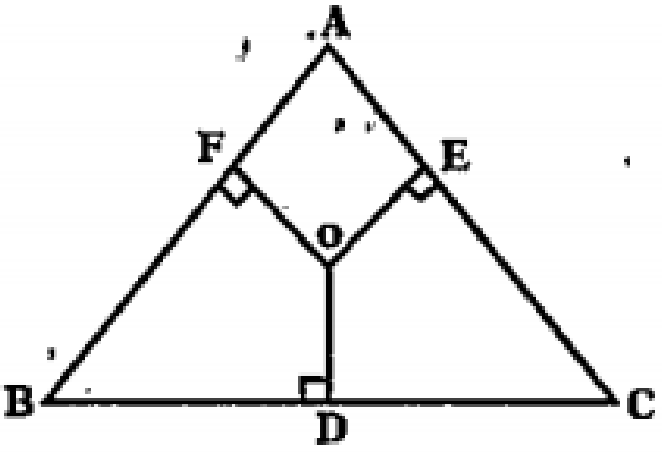
7. O' is any point in the interior of a triangle ABC. $OD \perp BC, OE \perp AC$ and $OF \perp AB$, Show that $OA^2 + OB^2 + OC^2 \tilde{n} OD^2 \tilde{n} OF^2 = AF^2 + BD^2 + CE^2$



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8. A wire attached to vertical pole of height 18m is 24m long and has a stake attached to the other end. How far from the base of the pole should the stake be driven so that the wire will be taut?

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9. Two poles of heights 6m and 11 m stand on a plane ground. IF the distance between the feet of the poles is 12m, find the distance between their tops.

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10. In an equilateral Triangle ABC,D is a point on side BC such that $BD = \frac{1}{3}BC$. Prove that $9AD^2 = 7AB^2$

.

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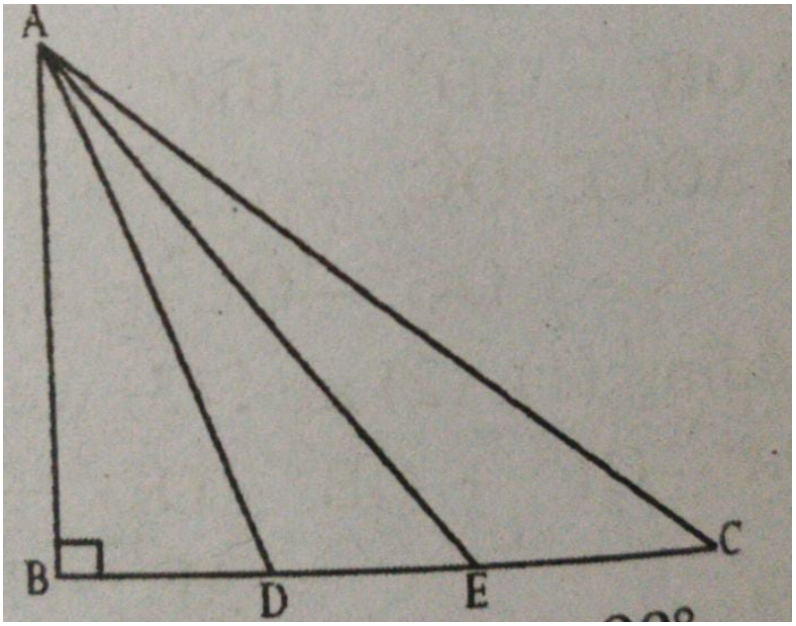
11. In the given figure, ABC is a Triangle right angled at B.D and E are points on BC trisect it. Prove that

$8AE^2 = 3AC^2 + 5AD^2$.



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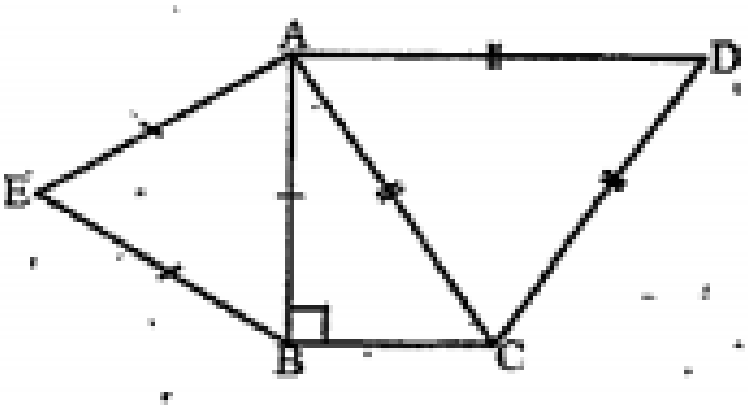
12. ABC is an isosceles triangle right angled at B. Similar triangles ACD and ABE are constructed on sides AC and AB. Find the ratio between the areas of

$\triangle ABE$ and $\triangle ACD$.



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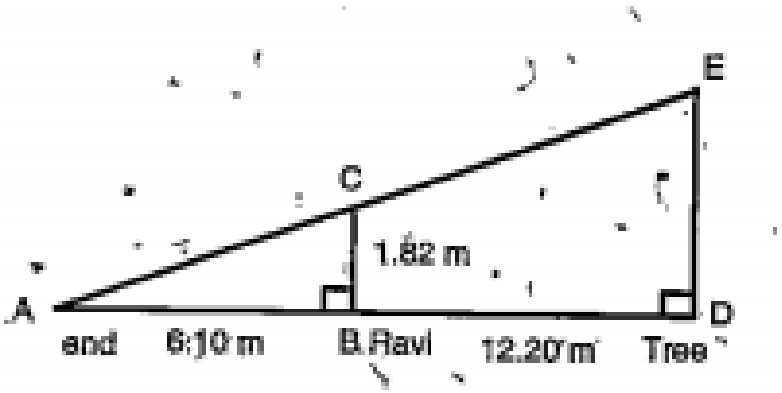
Optional Exercise

1. Ravi is 1.82 m tall. He wants to find the height of a tree in his backyard, From the tree's base he walked 12.20 m along the tree's shadow to a position where the end of his shadow exactly overlaps the end of the

tree's shadow. He is now 6.10 m from the end of the shadow. How tall is the tree?



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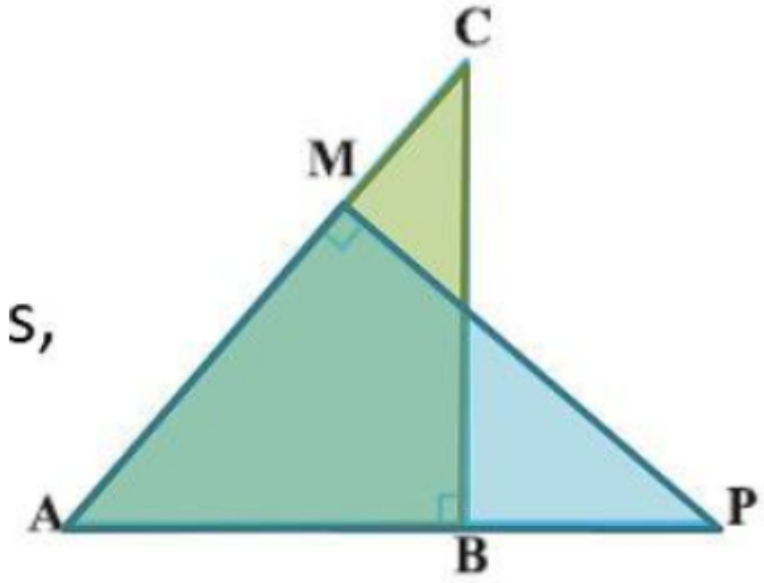
2. The diagonal AC of a parallelogram ABCD intersects DP at the point Q, where 'P' is any point on side AB. Prove that $CQ \times PQ = QA \times QD$.

Watch Video Solution

3. ΔABC and ΔAMP are two right triangle right angled at B and M respectively. Prove that (i) $\Delta ABC \sim \Delta AMP$ (ii) $\frac{CA}{PA} = \frac{BC}{MP}$



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4. An aeroplane leaves an airport and flies due north at a speed of 1000 kmph. At the same time another aeroplane leaves the same airport and flies due west at a speed of 1200 kmph. How far apart will the two planes be after $1\frac{1}{2}$ hour?

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5. In a right Triangle ABC right angled at C.P and Q are points on sides AC and CB respectively which divide these sides in the ratio of 2:1. Prove that

$9AQ^2 = 9AC^2 + 4BC^2$

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6. In a right Triangle ABC right angled at C.P and Q are points on sides AC and CB respectively which divide these sides in the ratio of 2:1. Prove that

$9BP^2 = 9BC^2 + 4AC^2$

Watch Video Solution

7. In a right Triangle ABC right angled at C.P and Q are points on sides AC and CB respectively which divide these sides in the ratio of 2:1. Prove that

$9\left(AQ^2 + BP^2\right) = 13AB^2$

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Part A Observation Material To Solve Various Question Given In The Public Examination 1 Mark Question

1. Is a square similar to a rectangle? Justify your answer.

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2. In a ΔDEF, A, B and C are mid points of EF,FD and DE respectively. IF the area of ΔDEF is 14.4 cm^2 then find the area of ΔABC.

Watch Video Solution

3. In ΔPQR and ΔXYZ it is given that $\Delta PQR \sim \Delta XYZ$, $\angle Y + \angle Z = 90^\circ$ and XY:XZ =3:4 . Then find the ratio of sides In ΔPQR.

Watch Video Solution

4. It is given that $\Delta ABC \sim \Delta DEF$. Is it true to say that $\frac{BC}{DE} = \frac{AB}{EF}$? Justify your answer.

Watch Video Solution

5. Find the value of 'x' in the given figure where $\Delta ABC \sim \Delta ADE$.

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6. Draw the diagram corresponding to Basis proportionality Theorem.

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7. Srivani walks 12 m due East and turns left and walks another 5m , how far is she from the place she started?

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8. In $\Delta ABC, LM \mid \mid BC$ and $\frac{AL}{LB} = \frac{2}{3}, AM = 5cm$. Find AC

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Part A Observation Material To Solve Various Question Given In The Public Examination 2 Mark Question

1. Given two diferent examples of pair of (i) similar figures. (ii) Non-similar figures.

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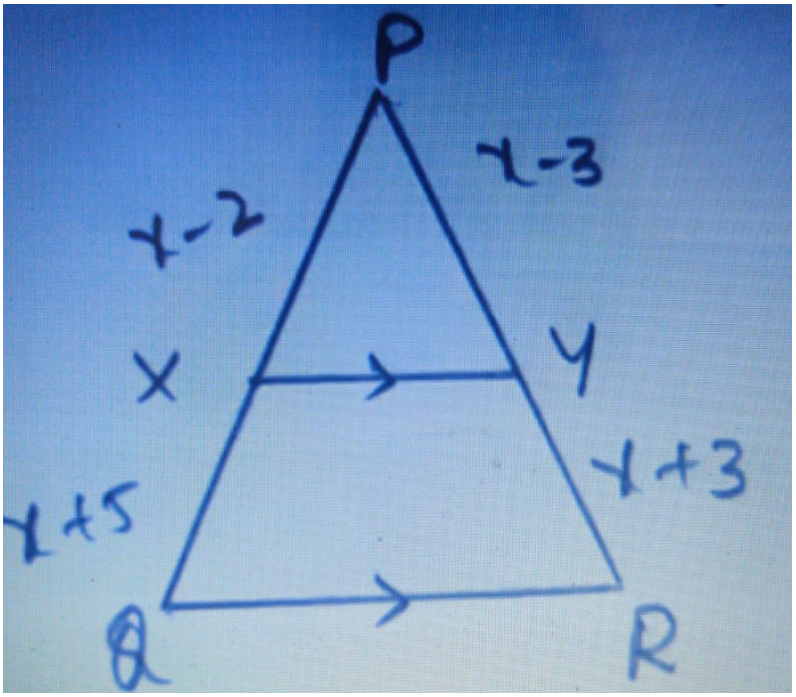
2. Observe the below figure.



In a ΔPQR , if $XY \mid\mid QR$ and PX=x-2, XQ=x+5, PY=x-3 and YR=x+3, then find the value of 'x'.

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3. Observe the below diagram and find the values of x and y.

Watch Video Solution

4. ABC is an isosceles Triangle and $\angle B = 90^\circ$, then show that $AC^2 = 2AB^2$.

Watch Video Solution

5. In a ΔABC, $AD \perp BC$ and $AD^2 = BD \times CD$, prove that ΔABC is an right angled Triangle.

Watch Video Solution

6. In $\Delta ABC, \overline{PQ} \mid \mid \overline{BC}$ and AP=3x-19, PB=x-5, AQ=x+3, QC=3cm. Find x.

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Part A Observation Material To Solve Various Question Given In The Public Examination 4 Mark Question

1. Construct a Triangle of sides 4.2cm, 5.1 cm and 6 cm. Then construct a Triangle similar to it, whose sides are

$2/3$ of corresponding sides of the first triangle.

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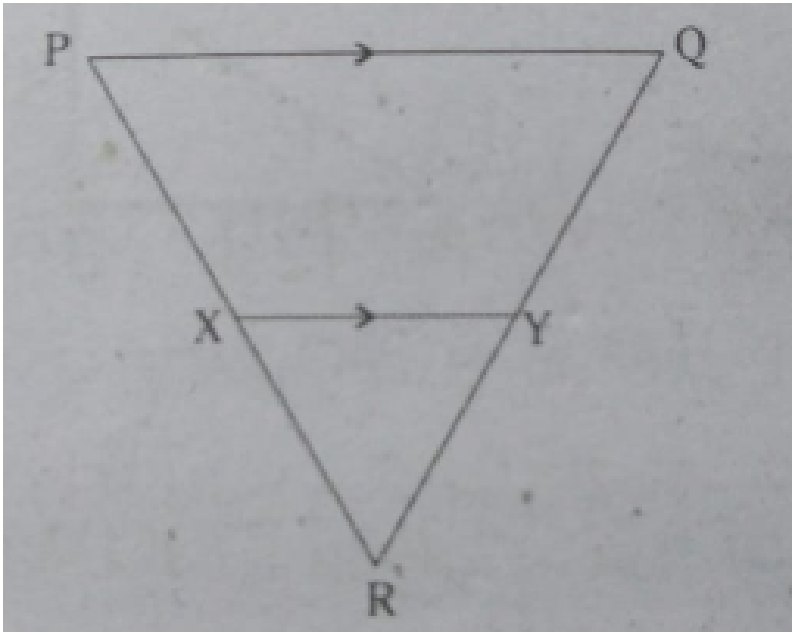
2. Observe the figure given below in ΔPQR if $XY//PQ$, $\frac{PX}{XR} = \frac{5}{3}$ and QR=7.2 . Then find the length of RY.



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3. ABC is a right angled triangle which is right angled at C. Let AB=c, BC=a, CA=b and let p be the length of perpendicular from C and AB. Prove that $c = \frac{ab}{p}$.

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4. Draw a line segment of length 8.1 cm and divide it in the ratio of 5:4. Then measure the divide two parts (this problem should be done by construction).

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5. Construct a triangle of sides 5 cm, 6 cm and 7cm then construct a triangle similar to it, whose sides are $2/3$ of a corresponding sides of the triangle.

Watch Video Solution

6. Construct a trianlge of sides 5cm, 6 cm and 7 cm . Then construct a triangle similar to it. Whose sides are $1^1/2$ times the corresponding sides of the first triangle.

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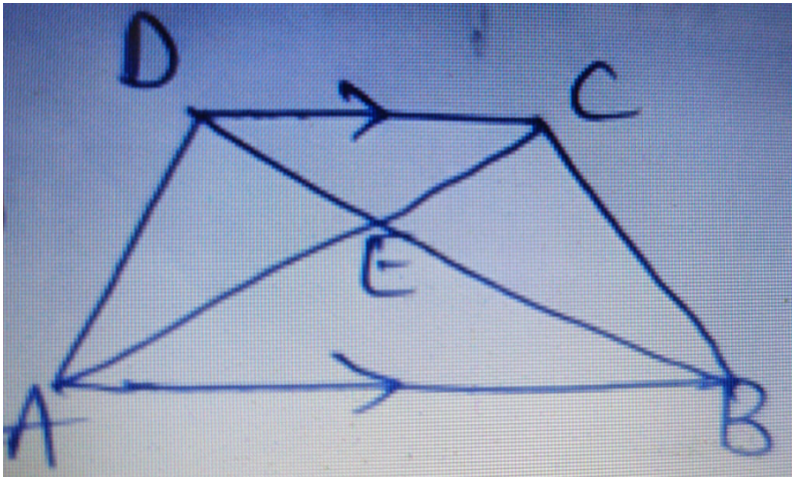
7. ABCD is a trapezium in which $AB \| DC$ the diagonals AC and BD are intersecting at E. IF ΔAED is similar to ΔBEC, then prove that AD=BC.



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8. Diagonals AC and BD of a trapezium ABCD with $AB \| DC$ intersect each other at the point

'O'.Using the criterion of similarity for two tri-angles , show that $\frac{OA}{OC} = \frac{OB}{OD}$.

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9. Construct an equilateral triangle XYZ of side 5 cm and construct another triangle similar to ΔXYZ, such that each of its sides is $4/5$ of the sides of ΔXYZ.

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10. Construct a triangle PQR, where QR=5.5 cm , $\angle Q = 65^\circ$ and PQ=6 cm. Then draw another triangle,

whose sides are $\frac{2}{3}$ times of the corresponding sides of ΔPQR.

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Creative Question For Cce Model Examination

1. State and prove basic Proportional theorem.

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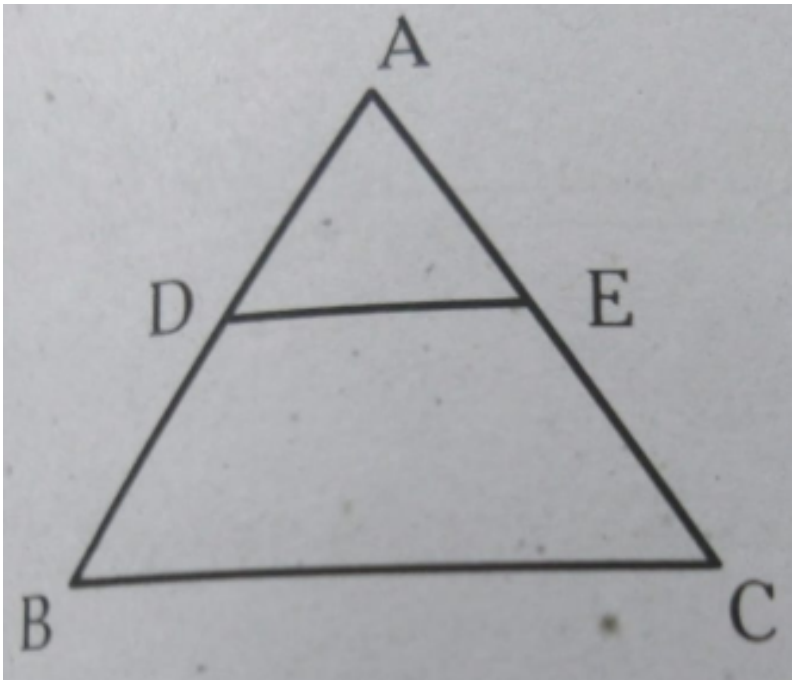
2. Divide the line segment AB=6cm in the ratio of 3:2. Explain the construction procedure.

Watch Video Solution

Watch Video Solution

3. In the given figure $BC \mid\mid DE$ and AD=DB=3.4 and AC=14.



So, find AE and EC.

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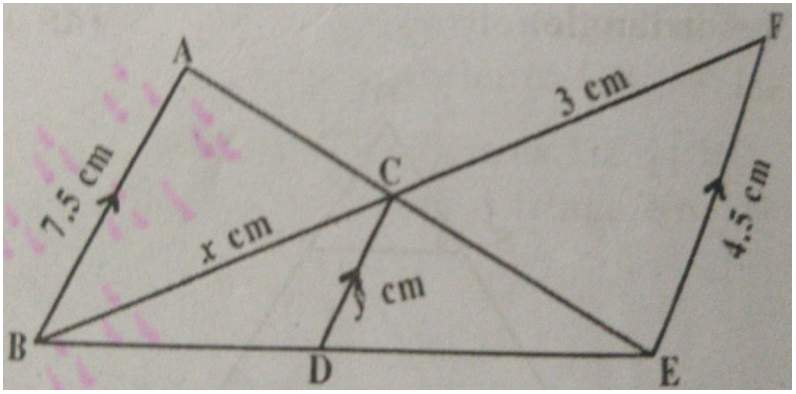
4. In the given ΔABC, points D and E are mid points of AB and AC and also BC=6 cm then find DE.

Watch Video Solution

5. In the given figure, $AB||CD||EF$ given AB=7.5 cm, DC= y cm , EF=4.5 cm, BC = x cm. Calculate the values of x and y.



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Observation Bits To Solve Various Bits In The Given In The Public Examination

1. The maximum nuber of possible tangents that can be draw to a circle is .....

A. Infinity

B. 4

C. 100

D. 2

Answer: A

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2. $\Delta ABC \sim \Delta DEF$ and areas of ΔABC, ΔDEF are $64cm^2$ and $121cm^2$ then the ratio of corresponding sides.

A. $11:8$

B. $8:11$

C. $3:11$

D. $19:8$

Answer: B

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3. Area of a regular hexagon whose side is 'a' cm is.....

A. $\left(\frac{\sqrt{3}}{4}a^2\right)$

B. $6\left(\frac{3}{4}a^2\right)$

C. $\sqrt{6}\left(\frac{3}{4}a^2\right)$

D. $6\left(\frac{\sqrt{3}}{4}a^2\right)$

Answer: D

Watch Video Solution

4. IF a man walks 6m to East and 8m to North. Now he is at a distance of .....from origin point.

A. 10m

B. 48 m

C. 14m

D. 2m

Answer: A

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5. Example for the sides of a Right angled triangle is.....

A. 5,6,9

B. 5,12,13

C. 5,11,12

D. 7,8,9

Answer: B

Watch Video Solution

6. Height of an equilateral triangle whose sides is 'a' cm is .....

A. $\frac{\sqrt{3}}{2}a$

B. $\frac{2}{\sqrt{3}}a^2$

C. $\sqrt{\frac{3}{2}}a$

D. $\frac{\sqrt{3}}{2}a^2$

Answer: A

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7. $\Delta ABC \sim \Delta XYZ$, $\angle C = 60^\circ$, $\angle B = 70^\circ$ then $\angle X$ =.....

A. $\angle X = 70^\circ$

B. $\angle X = 50^\circ$

C. $\angle X = 60^\circ$

D. $\angle X = 10^\circ$

Answer: B

Watch Video Solution

8. $\Delta ABC \sim \Delta DEF$ and their areas are respectively $64cm^2$ and $121cm^2$ IF EF=15.4 cm then BC=.....cm.

A. $\frac{11}{8}$

B. $\frac{8}{11}$

C. $\frac{64}{121}$

D. $\frac{121}{64}$

Answer: B

Watch Video Solution

9. Areas of 2 similar triangles are $100cm^2$ and $64cm^2$. IF the median of bigger triangle is 10 cm, then the median of the smaller triangle is .....

A. 10 cm

B. 6 cm

C. 4 cm

D. 8 cm

Answer: D

Watch Video Solution

10. In Heron's formula , area of triangle $= \sqrt{s(s-a)(s-b)(s-c)}$, s is .....of the triangle.

A. Perimeter

B. Height

C. Half of perimeter

D. None

Answer: C

Watch Video Solution

11. If $\Delta PQR \sim \Delta XYZ$ and $\angle X = 30^\circ, \angle Q = 50^\circ,$ then $\angle Z$=.....

A. 100°

B. $\angle R$

C. both A and B

D. not known

Answer: C

Watch Video Solution

12. Height of an equilateral triangle whose sides is 'a' cm is .....

A. $\frac{\sqrt{3}}{2}x$

B. $\frac{2}{\sqrt{3}}x$

C. $\frac{\sqrt{3}}{4}x^2$

D. $\frac{\sqrt{3}}{2}x^2$

Answer: A

Watch Video Solution

13. From the given figure, ar (ΔADE): ar (ΔABC)= .....

A. $25:9$

B. $9:64$

C. $25:64$

D. $9:25$

Answer: D

Watch Video Solution

14. In ΔABC, E and F are the points on the sides AB and AC respectively. IF AE=2 cm, EB=2.5 cm, AF=4 cm, and FC=5 cm, then.....

A. $EF \perp BC$

B. $EF \perp AB$

C. $EF \| BC$

D. $EF \| AB$

Answer: C

Watch Video Solution

15. $\Delta ABC \sim \Delta PQR$ and $\angle A + \angle B = 115^\circ$, then $\angle R$ =.....

A. 55°

B. 65°

C. 75°

D. 45°

Answer: B

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16. When we construct a triangle similar to a given triangle as per given scale factor, we construct on the basis of .....

A. SSS similarity

B. AAA similarity

C. Basis Proportionality theorem

D. A and C are correct

Answer: C

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17. $\Delta ABC \sim \Delta DEF$ is given then which of the following is correct.

A. 

B. 

C. 

D. None

Answer: A

View Text Solution

18. In $\Delta ABC \angle C = 90^\circ$, BC=a, AB=c, AC=b and 'p' is length of height drawn from 'C' to AB then .....is correct.

A. $\frac{1}{p^2} = \frac{1}{a^2} - \frac{1}{b^2}$

B. $\frac{1}{p^2} = \frac{1}{b^2} - \frac{1}{a^2}$

C. $\frac{1}{p^2} = \frac{1}{a^2} + \frac{1}{b^2}$

D. $\frac{2}{p^2} = \frac{1}{a^2} + \frac{1}{b^2}$

Answer: C

Watch Video Solution

19. In ΔABC AC=12 cm , AB=5 cm and $\angle BAC = 30^\circ$, then area of the ΔABC is.....

A. $30cm^2$

B. $15cm^2$

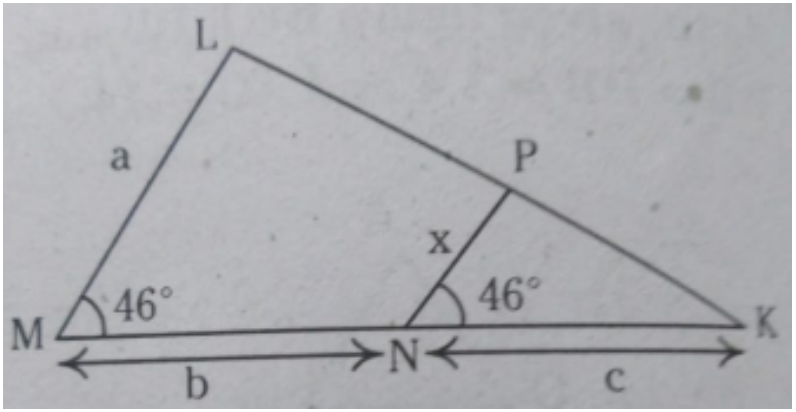
C. $60cm^2$

D. $20cm^2$

Answer: B

Watch Video Solution

20. Express 'x' in terms of a,b and c in the following figure.



A. $x = \frac{ac}{b+c}$

B. $x = \frac{bc}{b+c}$

C. $x = \frac{b+c}{ac}$

D. $x = \frac{ab}{a+c}$

Answer: A

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21. In a right angled triangle with integral sides at least one of its measurements must be.....

A. multiple of 3

B. multiple of 9

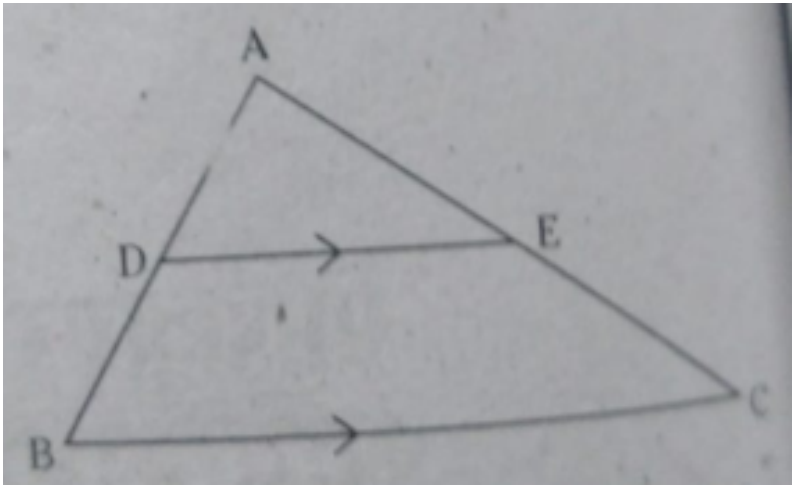
C. mulitple of 2

D. multiple of 7

Answer: A::C

Watch Video Solution

22. In the figure ΔABC, $DE \mid\mid BC$, AD=1.5 cm, DB=6 cm, AE= x cm , EC= 8cm, then x=.....



A. 2.5 cm

B. 2 cm

C. 3 cm

D. 3.5 cm

Answer: B

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23. IF $\Delta ABC \sim \Delta DEF$ and area (ΔABC): area (ΔDEF)=49:100.

Then DE:AB=.....

A. $9:10$

B. $10:7$

C. $10:9$

D. $7:10$

Answer: B

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24. IF $\Delta PQR \sim \Delta XYZ$, QR=3cm , YZ=4cm ΔPQR area =54 cm^2. Then ΔXYZ area=.....

A. $13.5cm^2$

B. $46cm^2$

C. $96cm^2$

D. $12cm^2$

Answer: C

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25. In $\Delta ABC$with $\angle A = 90^\circ$, from A, perpendicular AD is drawn on BC, which one of the following is NOT correct?

A. $\Delta ABC \sim \Delta DAC$

B. $\Delta DAC \sim \Delta DBA$

C. $\Delta ABC \sim \Delta DBA$

D. $\Delta ABC \sim \Delta DBA \sim \Delta DAC$

Answer: A::C::D

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26. The perimeter of two similar triangles are in 4:9 ratio, the ratio of their corresponding sides is.....

A. $9:4$

B. $2:3$

C. $16:81$

D. $4:9$

Answer: D

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27. The theorem applied to divide the line segment in the given ratio is.....

A. Pythagorus theorem

B. Thales theorem

C. Euclid's theorem

D. Brahmagupta theorem

Answer: B

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28. Reciprocal of $\tan\theta$ is.....

A. $\sec\theta$

B. $\cot\theta$

C. $\cos ec\theta$

D. $-\tan\theta$

Answer: B

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29. $\left(\sec^2\theta - 1\right)\left(\cos ec^2\theta - 1\right)$=.....

A. 0

B. 1

C. $\tan^2\theta$

D. $\cot^2\theta$

Answer: B

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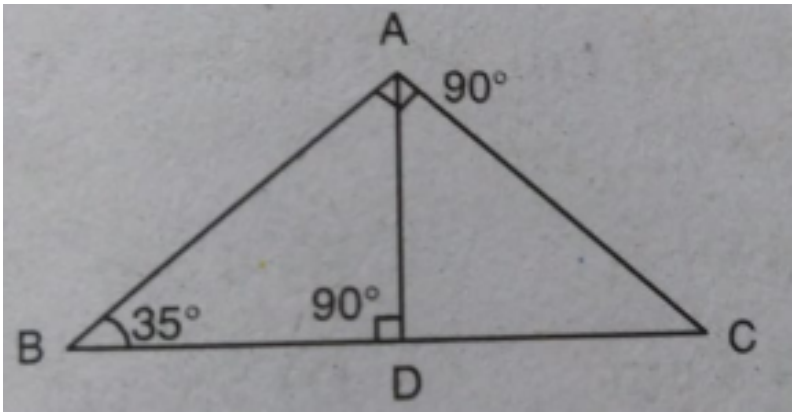
Creative Bits For Cce Model Examination

1. From the figure ,$\angle DAC$.....



A. 35°

B. 55°

C. 45°

D. 60°

Answer: A

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2. The ratio of the corresponding sides of two similar triangles is 5:3. Then the ratio of their areas.....

A. $5:3$

B. $3:5$

C. $6:10$

D. $25:9$

Answer: D

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3. $\Delta ABC \sim \Delta DEF$, BC=4cm, EF=5cm and area of $\Delta ABC = 80cm^2$ then area of ΔDEF=.....cm^2

A. $100cm^2$

B. $150cm^2$

C. $125cm^2$

D. $225cm^2$

Answer: C

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4. In the given figure, DE/BC and AD:DB=5:4, then $\frac{\Delta DEF}{\Delta CFB}$=

A. $\frac{81}{25}$

B. $\frac{5}{9}$

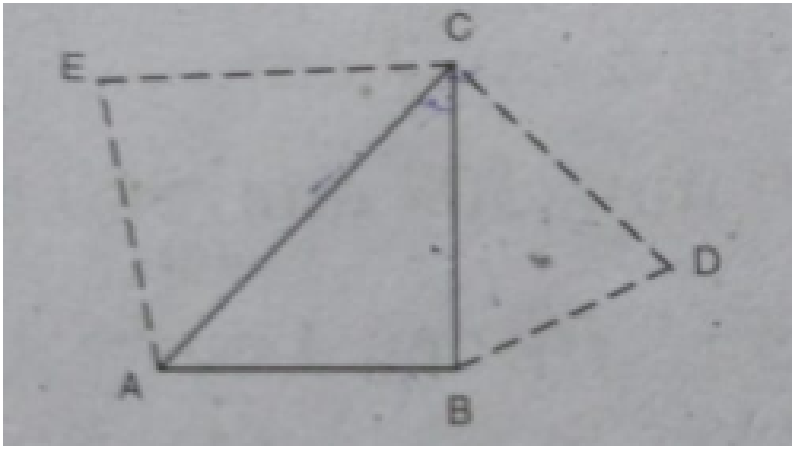
C. $\frac{5}{4}$

D. $\frac{25}{81}$

Answer: D

Watch Video Solution

5. In the figure, ΔABC is an isosceles triangle right angled at B. Two equilateral triangles are constructed with sides AC and BC. Then ΔBCD=



A. ΔACE

B. ΔABC

C. $\frac{1}{2}(\Delta ABC)$

D. $\frac{1}{2}(\Delta ACE)$

Answer: D

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6. In the figure, DE/BC and AD:DB=1:2 then $\Delta ADE:\Delta ABC$=

A. $1:4$

B. $4:1$

C. $1:9$

D. $2:9$

Answer: C

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Watch Video Solution

7. $\Delta ABC \sim \Delta PQR$, M is the midpoint of BC and N is the midpoint of QR. IF $\Delta ABC = 100cm^2$ and $\Delta PQR = 144cm^2$ and AM=4 cm, then PN=

A. 5 cm

B. 4.8 cm

C. 4 cm

D. 3.8 cm

Answer: B

Watch Video Solution

8. In the figure, ΔPQR and ΔSQR are two triangles on the same base QR. IF PS intersects QR at'O' , then $\Delta PQR : \Delta SQR$=

A. PO:SO

B. PQ:QS

C. PR:SR

D. PQ:SR

Answer: A

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9. In ΔPQR, $PQ = 6\sqrt{3}$cm, PR=12cm and QR=6cm , then $\angle Q$=

A. 30°

B. 45°

C. 90°

D. 60°

Answer: B

Watch Video Solution

10. The lengths of diagonals of a rhombus are 24 cm and 32 cm, then the perimeter of the rhombus

is.....cm.

A. 80

B. 120

C. 220

D. 112

Answer: A

Watch Video Solution

11. Which of the following are not the sides of a right triangle?

A. 9cm, 15cm, 12cm

B. 9cm,5cm,7cm

C. 400mm,300mm,500,,

D. 2cm,$\sqrt{5}$cm,1cm

Answer: B

Watch Video Solution

12. In an isosceles ΔPQR,PR=QR and $PQ^2 = 2PR^2$, then $\angle R$=

A. 60°

B. 30°

C. 90°

D. 45°

Answer: C

Watch Video Solution

13. In ΔABC the midpoints are D,E and F of the sides AB,BC and CA, then $\Delta DEF : \Delta ABC$ is

A. $1:1$

B. $1:3$

C. $1:2$

D. $1:4$

Answer: D

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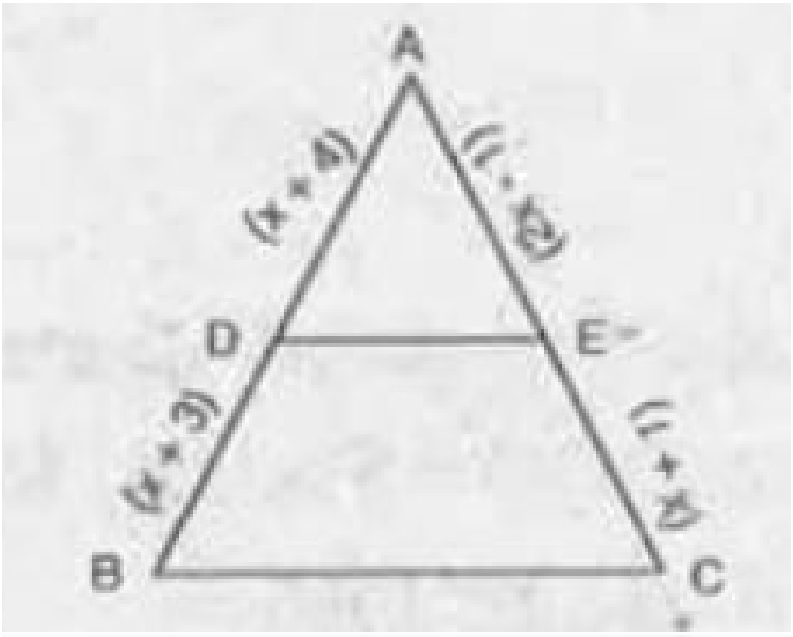
14. In the following figure, $DE \parallel BC$ then x=



A. $\sqrt{3}$

B. $\sqrt{7}$

C. $\sqrt{6}$

D. $\sqrt{5}$

Answer: B

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15. The areas of two similar triangle are $25cm^2$ and $36cm^2$. IF the median of smaller triangle is 10 m, then the median of the larger triangle is

A. 15m

B. 18m

C. 16m

D. 12m

Answer: D

Watch Video Solution

16. IN ΔABC AD bisects $\angle A$. AB=6cm, BD=8cm and DC=6cm then AC=.....cm.

A. 4.5cm

B. 4 cm

C. 4.8 cm

D. 5.6 cm

Answer: A

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17. ΔABC and ΔBDE are two equilateral triangles such that D is the midpoint of BC. Ratio of the areas of triangles ΔABC and ΔBDE is

A. $2:1$

B. $1:2$

C. $4:1$

D. $2:3$

Answer: C

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18. In a right triangle

A. hypotenuse=Adj side +Opp. Side

B. hypotenuse=$(Adj.\ side)^2$+$(Opp.\ side)^2$

C. $hypotenuse^2$=Adj.side +Opp.side

D. $hypotenuse^2 = (Adj.\ side)^2 + (Opp.\ side)^2$

Answer: D

Watch Video Solution

19. IF in two triangles , corresponding sides are in the same ratio then the two triangles are similar, this is called .....criterion.

A. SAS

B. ASA

C. SSS

D. None

Answer: C

Watch Video Solution

20. IF $\Delta ABC \sim \Delta XYZ, \angle C = 60^\circ, \angle B = 75^\circ,$ then $\angle Z =$

A. 90°

B. 75°

C. 45°

D. 60°

Answer: D

Watch Video Solution

21. The areas of two similar triangles are $36cm^2$ and $64cm^2$. IF one side of the first triangle is 6 cm then the corresponding side of the latter triangle is .....cm.

A. 12

B. 10

C. 8

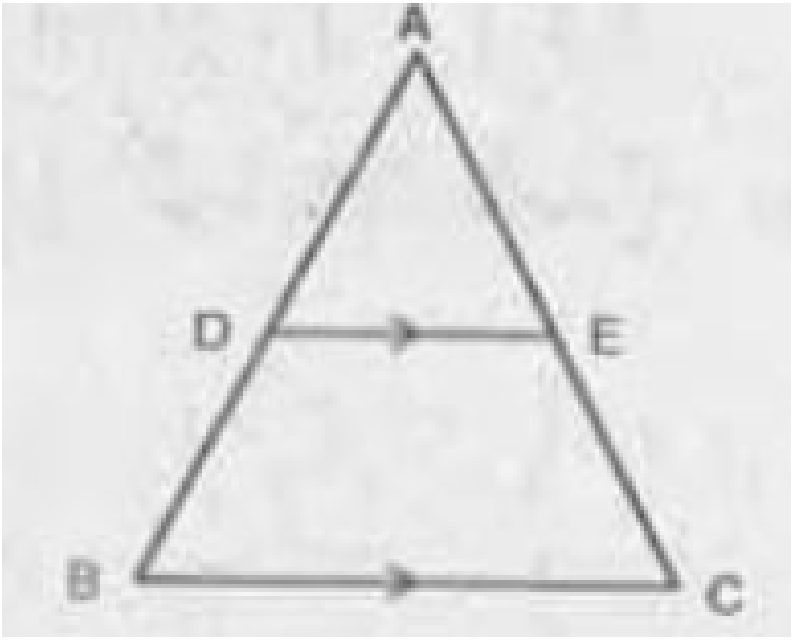
D. 6

Answer: C

Watch Video Solution

22. In the figure, D,E are mid-points of AB and AC then

$\Delta ADE : \square BCED =$



A. $1:4$

B. $1:3$

C. $2:1$

D. $3:2$

Answer: B

Watch Video Solution

23. The sides PQ and PR of right triangle PQR are such that PQ=5cm, PR=13cm . IF $\angle Q = 90^\circ$ then QR=

A. 8cm

B. 12cm

C. 18cm

D. 10cm

Answer: B

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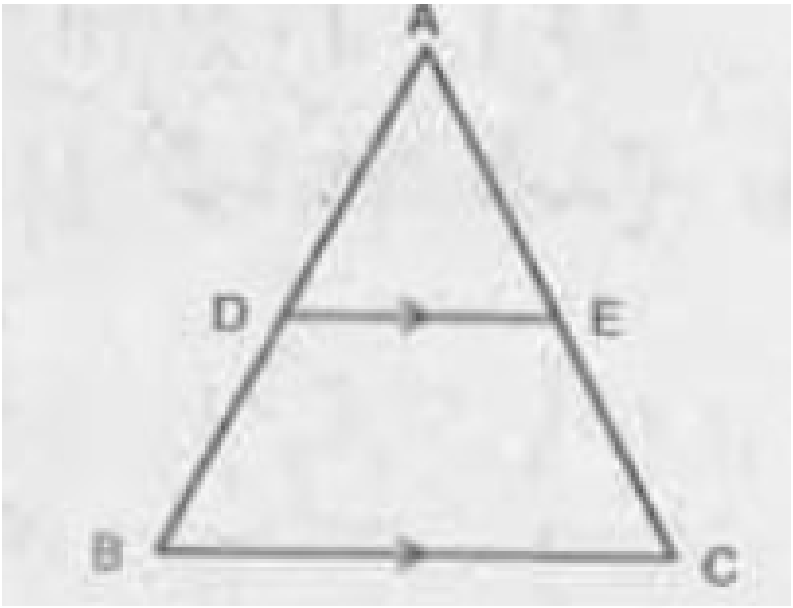
Watch Video Solution

24. In the figure D,E are the midpoints of the sides AB and AC. IF DE=4cm, then BC=



A. 4cm

B. 6cm

C. 8cm

D. 12cm

Answer: C

Watch Video Solution

25. The height of an equilateral triangle whose side is a units is

A. $\frac{a}{2}$

B. $\frac{\sqrt{3}}{2}a$

C. $\sqrt{3}a$

D. $\frac{\sqrt{3}}{4}a$

Answer: B

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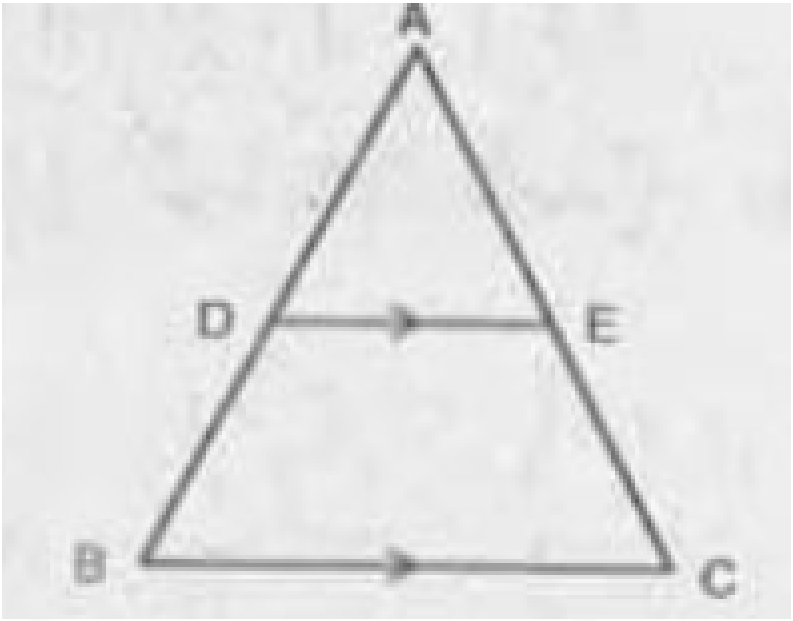
26. In the figure , DE divides AB and AC in the ratio 1:3

IF DE=2.4 cm, then BC=



A. 4.8cm

B. 7.2cm

C. 9.6cm

D. 12.0cm

Answer: B

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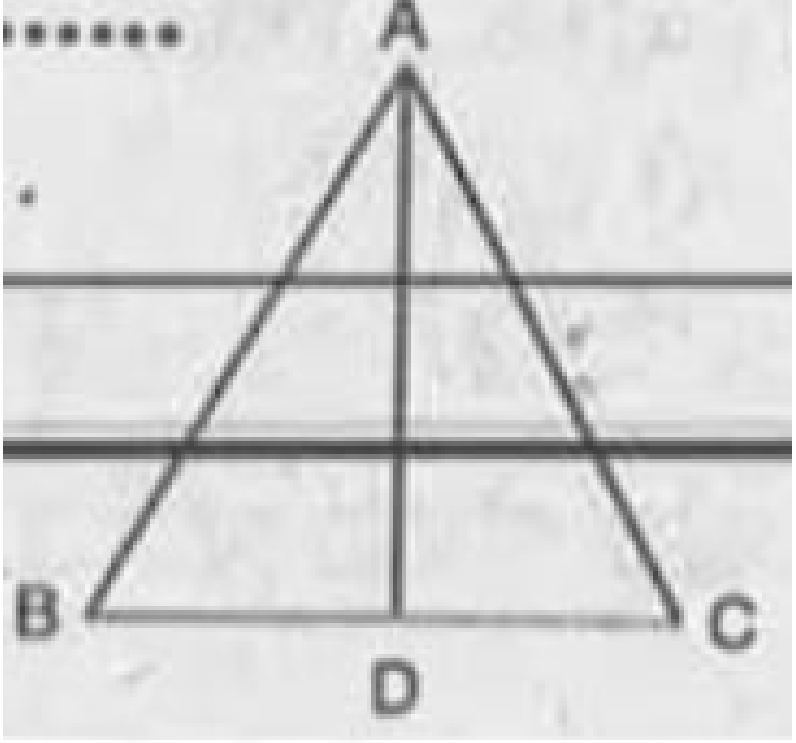
27. In the figure, AB=2.5cm, AC=3.5 cm. IF AD is the bisector of $\angle BAC$, then BD:DC=.....



A. $5:3$

B. $3:5$

C. $5:7$

D. $2:7$

Answer: C

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28. If the diagonal of a square is $7\sqrt{2}$ cm, then its area is

A. $28cm^2$

B. $14\sqrt{2}cm^2$

C. $21cm^2$

D. $49cm^2$

Answer: D

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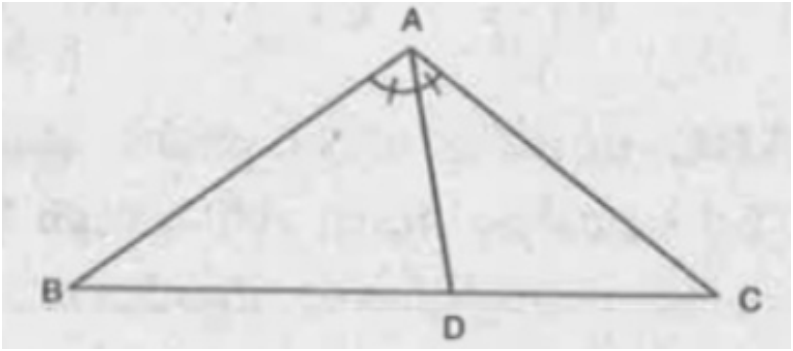
29. In the figure $\angle BAD = \angle CAD$, AB=3.4cm, BD=4cm, BC=10cm, then AC=



A. 5.1cm

B. 3.4cm

C. 6cm

D. 5.3cm

Answer: A

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30. The diagonals of a rhombus are 24 cm and 32cm, then its perimeter is

A. 80cm

B. 45cm

C. 38.4cm

D. 56cm

Answer: A

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31. $\Delta ABC \sim \Delta PQR$, M is the midpoint of BC and N is the midpoint of QR. IF $\Delta ABC = 100cm^2$ and $\Delta PQR = 144cm^2$ and AM=4 cm, then PN=

A. 12cm

B. 4cm

C. 4.8cm

D. 5.6cm

Answer: C

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32. All circles are.....

A. not similar

B. similar

C. congruent

D. none

Answer: B

Watch Video Solution

33. All squares are.....

A. congruent

B. not similar

C. similar

D. None

Answer: C

Watch Video Solution

34. All.....triangles similar.

A. equilateral

B. scalene

C. isosceles

D. none

Answer: A

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35. Two polygons are similar if.....

A. corresponding angles are equal

B. corresponding sides are equal

C. both A&B

D. None

Answer: C

Watch Video Solution

36. The ratio of areas of two similar triangles is equal to the ratio of the squares of corresponding.....

A. sides

B. areas

C. angles

D. none

Answer: A

Watch Video Solution

37. A perpendicular is drawn from the vertex of a right angle to the hypotenuse then the triangles on each side of the perpendicular are.....

A. similar

B. not similar

C. square

D. none

Answer: A

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38. IF one angle of a triangle is equal to one angle of another triangle and the sides including these angles are proportional, the two triangles are similar. This property is.....

A. SSS

B. ASA

C. AAA

D. SAS

Answer: D

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39. IF the sides of two similar triangles are in the ratio $7:2$ then the ratio of their areas is.....

A. $9:2$

B. $8:9$

C. $4:49$

D. $49:4$

Answer: D

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40. $\Delta ABC \sim \Delta PQR, \angle A = 32^\circ, \angle R = 65^\circ$ then $\angle B$ =.....

A. 64°

B. 73°

C. 83°

D. none

Answer: C

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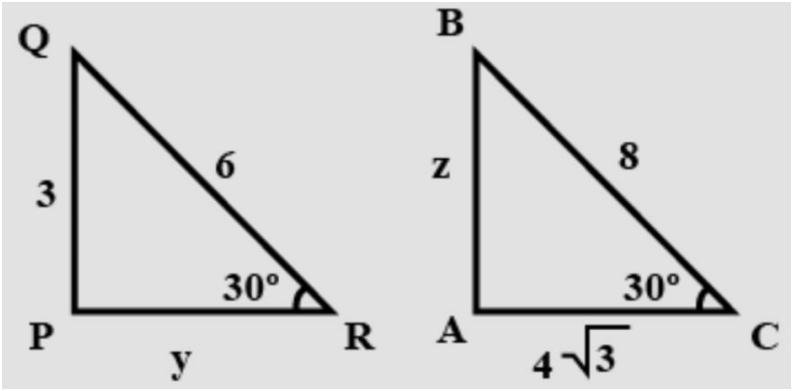
41. 

IF $\Delta ABC \sim \Delta PQR$ then y+z=.....

A. $1 + 3\sqrt{3}$

B. $4 + 3\sqrt{3}$

C. $3\sqrt{3} + 7$

D. $9 + \sqrt{3}$

Answer: B

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42. In $\Delta LMN, \angle L = 60^\circ, \angle M = 50^\circ$ and $\Delta LMN \sim \Delta PQR$ then $\angle R$=.....

A. 70°

B. 80°

C. 90°

D. None

Answer: A

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43. The perimeter of $\Delta ABC \sim \Delta LMN$ are 60 cm and 48 cm of LM=8cm then AB=.....cm.

A. 19

B. 11

C. 7

D. 10

Answer: D

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44. IN $\Delta ABC, BC^2 + AB^2 = AC^2$ then.....is the right angle.

A. $\angle B$

B. $\angle A$

C. $\angle C$

D. None

Answer: A

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45. The bisector of $\angle A$ of ΔABC intersects BC at D. IF BD:DC=4:7 and AC=3.5. Then AB=.....

A. 2

B. 8

C. 10

D. 11

Answer: A

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46. $\Delta ABC \sim \Delta PQR, \angle A = 50^\circ$ then $\angle Q + \angle R$ =.....

A. 120°

B. 110°

C. 130°

D. 80°

Answer: C

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47. The ratio of corresponding sides of two similar triangles is 3:2 then the ratio of their corresponding heights is.....

A. $3:2$

B. $2:3$

C. $1:4$

D. $1:7$

Answer: A

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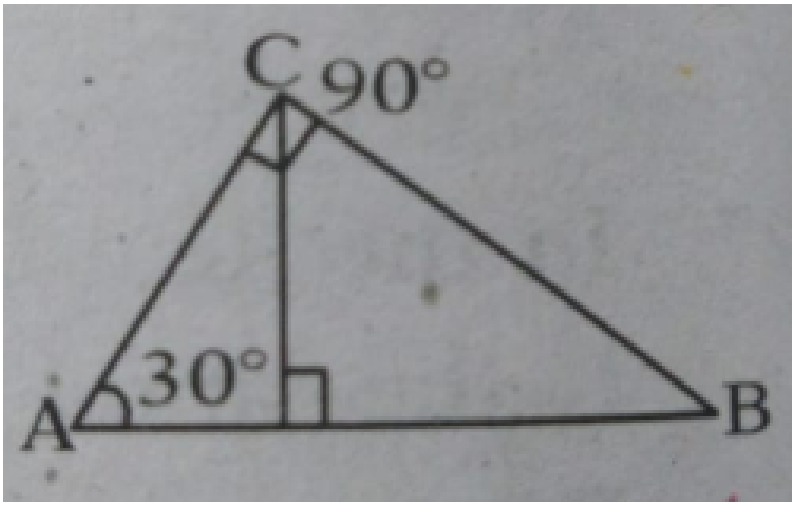
48. In the figure $\angle ABC$=.....



A. 30°

B. 70°

C. 50°

D. 60°

Answer: D

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49. In $\Delta ABC, XY \| BC$, AX:XB=2:1 then $\Delta AXY : \Delta ABC$=.....

A. $9:4$

B. $4:9$

C. $1:9$

D. $2:3$

Answer: B

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50. In a square, the diagonal is.....times of its side.

A. $\sqrt{7}$

B. $\sqrt{3}$

C. $\sqrt{2}$

D. 2

Answer: C

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51. The side of an equilateral triangle is 'a' units . Its height is.....units.

A. $\frac{\sqrt{3}a}{2}$

B. $\frac{\sqrt{3}}{4}a$

C. $\frac{3}{a}\sqrt{2}$

D. $\frac{3}{2}$

Answer: A

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52. The ratio of the areas of two similar triangles is 1:4 then the ratio of their corresponding sides.....

A. $9:1$

B. $1:1$

C. $2:1$

D. $1:2$

Answer: D

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53. $\Delta ABC \sim \Delta PQR$ then AB:PQ=.....

A. AC:PR

B. AC:PQ

C. AB:PR

D. None

Answer: A

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54. ΔABC is an isosceles triangle $\angle C = 90^\circ$ then AB^2=.....

A. $AB^2 + BC^2$

B. $AC^2 + BC^2$

C. $AC^2 + 2$

D. none

Answer: B

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55. Each angle of an equilateral triangle is.....

A. 60°

B. 80°

C. 100°

D. 70°

Answer: A

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56. Each exterior angle of an equilateral triangle is.....

A. 180°

B. 130°

C. 110°

D. 120°

Answer: D

Watch Video Solution

57. The longest side in a right triangle is.....

A. smaller

B. hypotenuse

C. adjacent side

D. none

Answer: B

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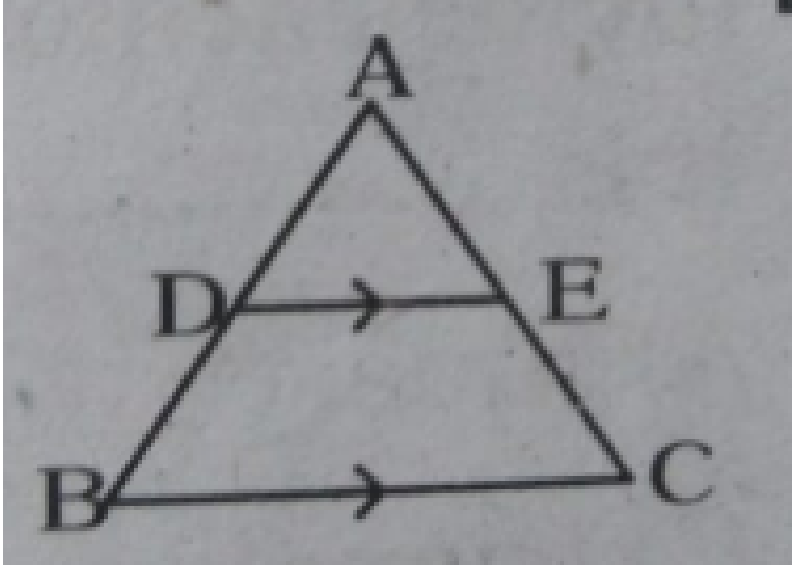
58. In the figure, $\Delta ABC, DE//BC$ and $\frac{AD}{DB} = \frac{3}{5}$, AC=5.6 then AE=.....cm.



A. 1.8

B. 3.5

C. 1.2

D. 2.1

Answer: D

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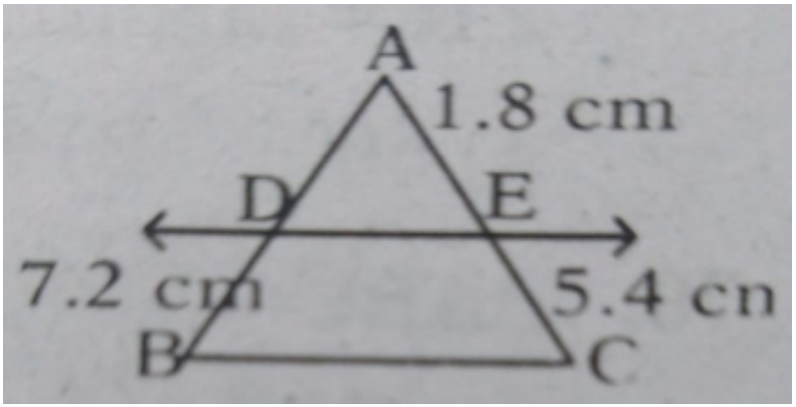
59. From the figure, AD=.....cm.



A. 2.4

B. 4.2

C. 8.2

D. 9.2

Answer: A

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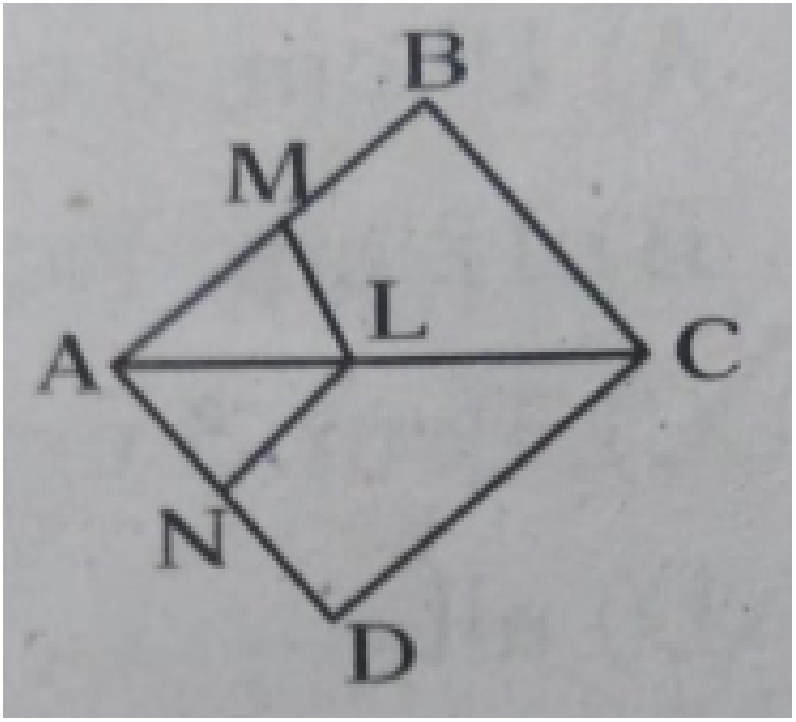
60. In the figure, $LM||CB$ and $LN||CD$ then $\frac{AM}{AB}$=.....



A. $\frac{AN}{AD}$

B. $\frac{AN}{ND}$

C. $\frac{LC}{ND}$

D. none

Answer: A

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61. In a trapezium, diagonals divide each other.....

A. proportionally

B. not proportional

C. congruent

D. none

Answer: A

Watch Video Solution

62. In ΔABC, AB=BC=AC then $\angle A = \angle B = \angle C$=.....

A. 70°

B. 60°

C. 80°

D. 90°

Answer: B

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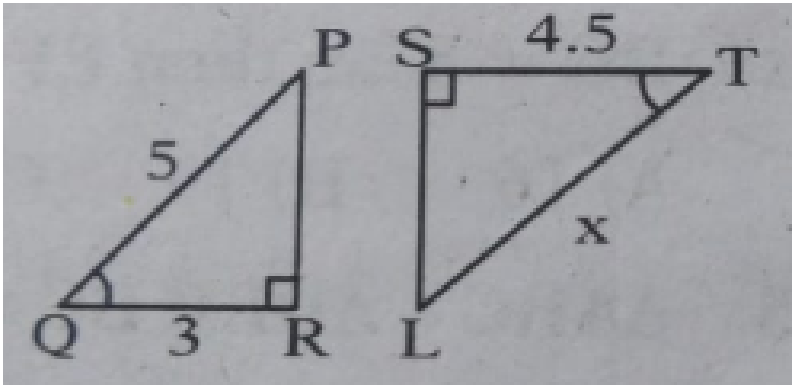
63. In the figure , two triangles are similar then x=.....cm.



A. 9.3

B. 1.5

C. 7.5

D. 8.5

Answer: C

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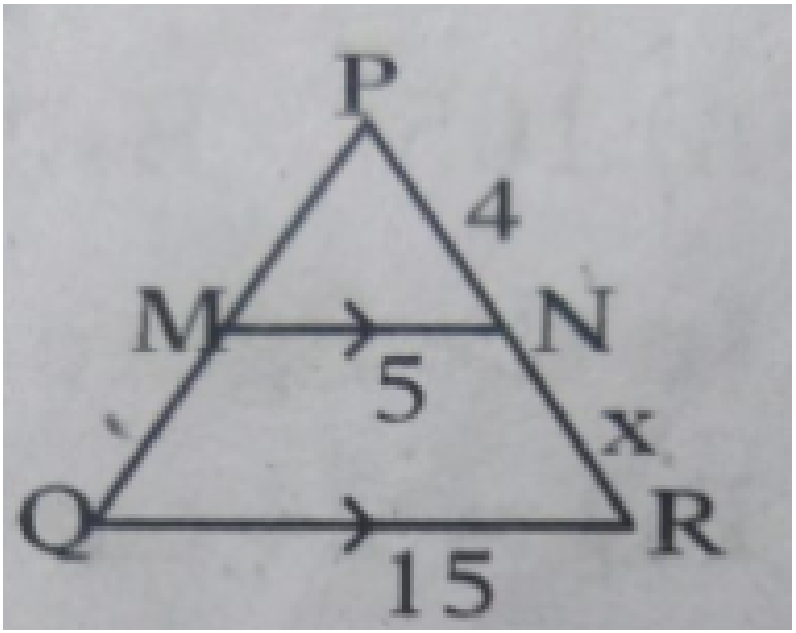
64. In the figure, x=.....cm.



A. 10

B. 12

C. 9

D. 8

Answer: D

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65. $\Delta ABC \sim \Delta PQR, \angle A + \angle B = 100^\circ, \angle R$=.....

A. 60°

B. 80°

C. 90°

D. 100°

Answer: B

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66. $\Delta ABC \sim \Delta DEF$ and their areas are respectively $64cm^2$ and $121cm^2$ IF EF=15.4 cm then BC=.....cm.

A. 10.2

B. 8.7

C. 11.2

D. 10.3

Answer: C

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67. Which of the following are the sides of a right triangle?

A. 10cm,8cm,6cm

B. 12cm,1cm,9cm

C. 3cm,5cm,12cm

D. all

Answer: A

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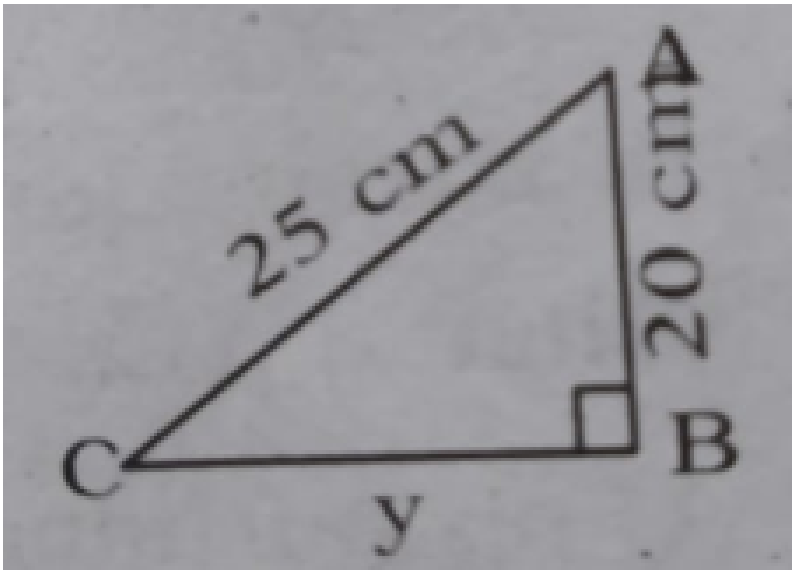
68. From the figure y=.....cm.



A. 9

B. 10

C. 12

D. 13

Answer: D

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69. The diagonal of a trapezium ABCD in which $AB//CD$ intersect at'O' . IF AB=2CD then the ratio of areas of triangles AOB and COD is.....

A. $14:1$

B. $1:2$

C. $1:9$

D. None

Answer: D

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70. $\Delta ABC \sim \Delta DEF$ and 2AB=DE and BC=8cm then EF=.....cm.

A. 16

B. 19

C. 12

D. None

Answer: A

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71. $\Delta ABC \sim \Delta DEF$, BC=4cm, EF=5cm and area of $\Delta ABC = 80cm^2$ then area of ΔDEF=.....cm^2

A. 105

B. 165

C. 125

D. None

Answer: C

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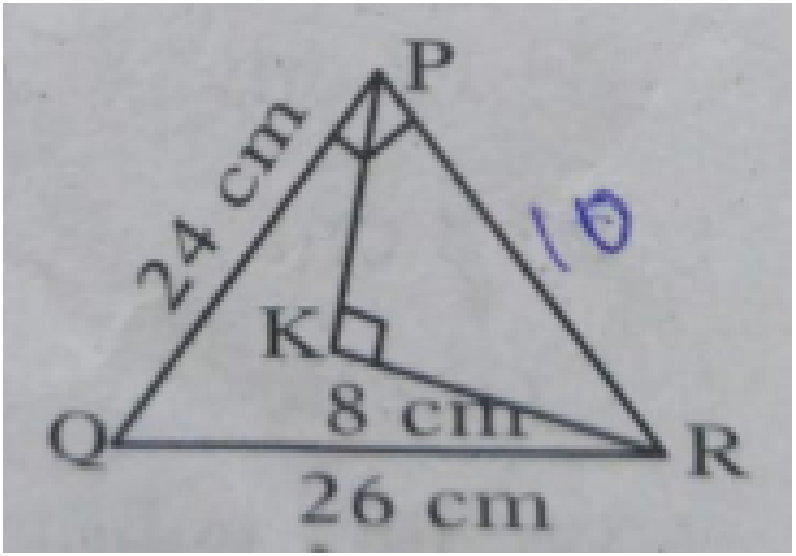
72. In the figure PQR, $\angle QPR = 90^\circ$, PQ=24cm and QR=26cm and in ΔPKR, $\angle PKR = 90^\circ$ and KR=8cm then PK=.....cm.



A. 10

B. 6

C. 19

D. 8

Answer: B

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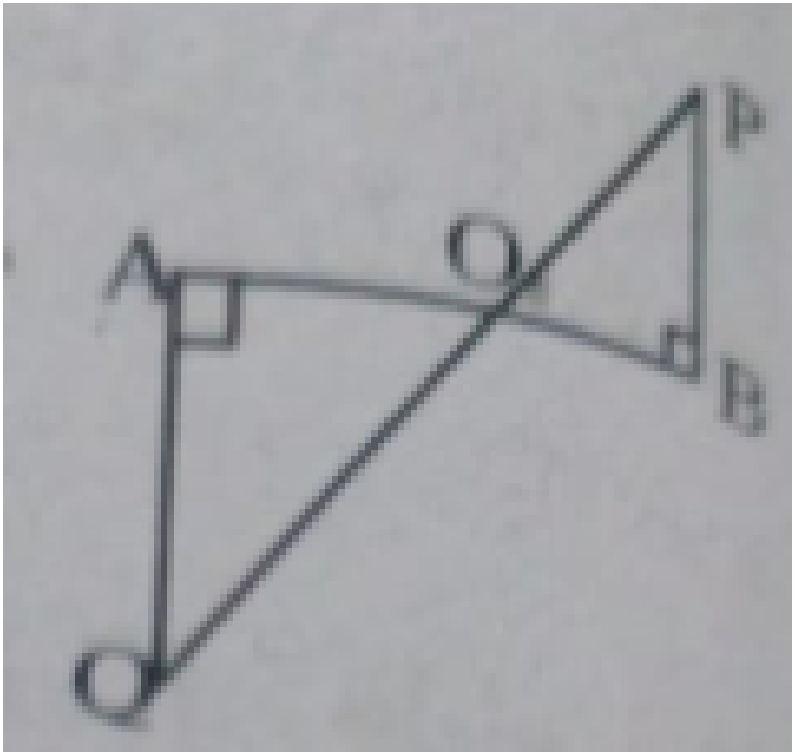
73. In the figure, QA $\perp$ AB and PB $\perp$ AB if AO=20cm, BO=12cm, PB=18cm then AQ=.....cm.



A. 70

B. 60

C. 40

D. 30

Answer: D

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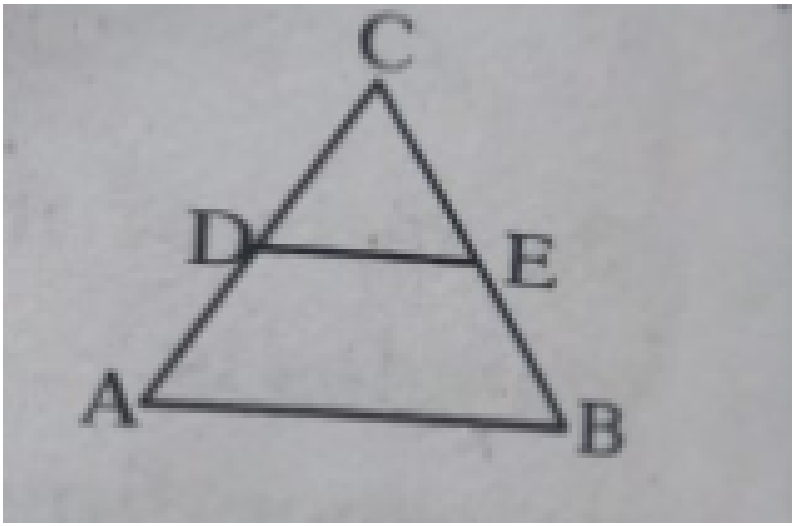
74. In the figure $\angle A = \angle B$ and AD=BE then.....



A. $DE||AB$

B. DE=AB

C. CD=EB

D. None

Answer: A

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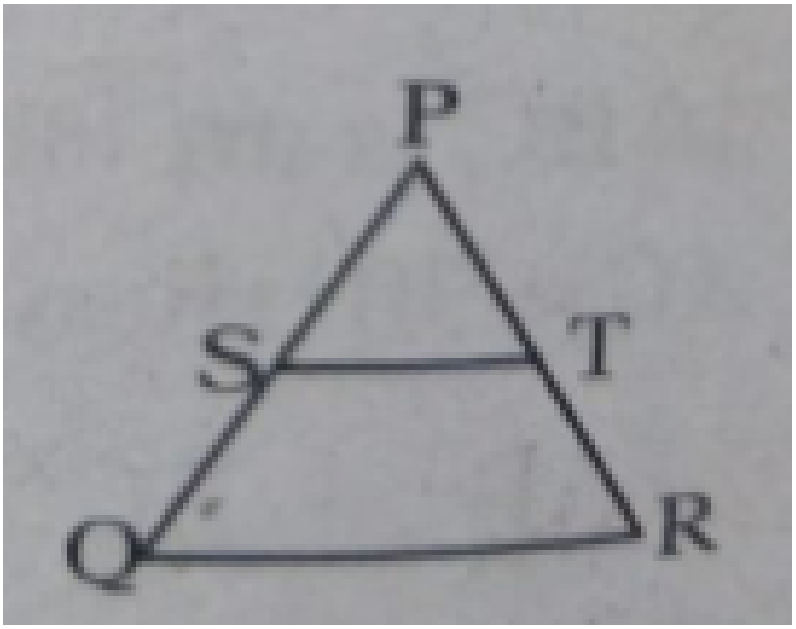
75. In the figure , in $\Delta PQR, QR//ST, \frac{PS}{SQ} = \frac{3}{5}$ and PR=28 cm then PT=.....cm.



A. 6.5

B. 10.5

C. 8.1

D. 3.3

Answer: B

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76. In an equilateral triangle ABC, AD $\perp$ BC meeting BC in D then AD^2=.....

A. $3BD^2$

B. BD^2

C. AB^2

D. None

Answer: A

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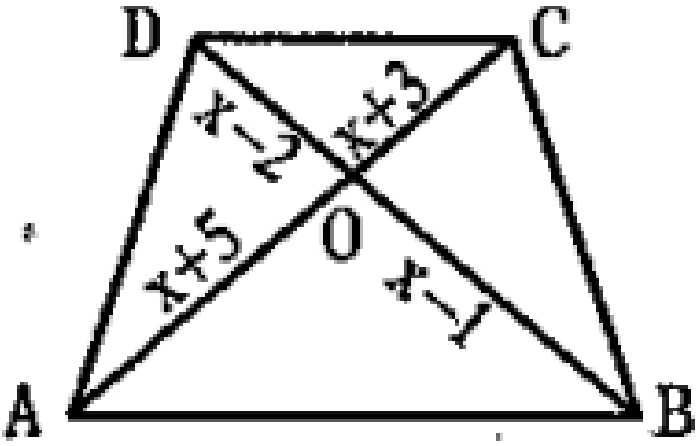
77. In the figure , if $AB \parallel CD$ then x=.....cm.



A. 10

B. 12

C. 7

D. 9

Answer: C

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78. IF the diagonals in a quadrilateral divide each other proportionally then it is.....

A. square

B. trapezium

C. triangle

D. None

Answer: B

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79. D,E,F are midpoints of sides BC,CA,AB of ΔABC. Find the ratio of areas of ΔDEF and ΔABC.

A. $1:9$

B. $2:1$

C. $1:2$

D. $1:4$

Answer: D

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80. In the figure $\frac{PS}{SQ} = \frac{PT}{TR}$ and $\angle PST = \angle PRQ$ then ΔPQR is.....triangle.

A. isosceles

B. equilateral

C. scalene

D. none

Answer: A

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81. Side of a rhombus is 4 cm then its perimeter is.....cm.

A. 22

B. 21

C. 16

D. 20

Answer: C

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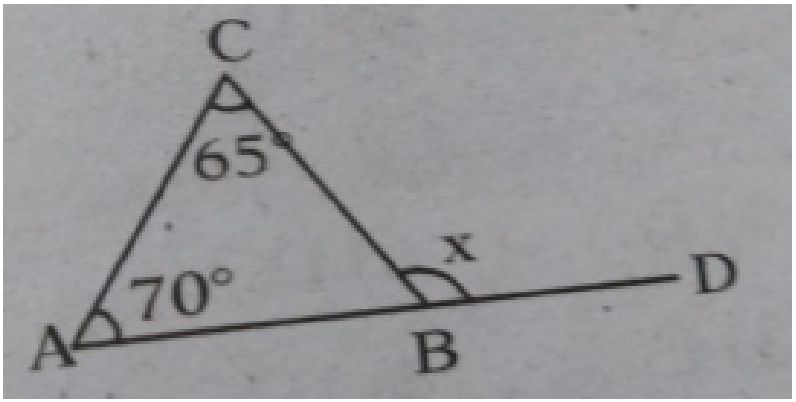
82. In the figure, x=.....



A. 130°

B. 135°

C. 45°

D. 15°

Answer: B

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83. Two sides of a right triangle are 3cm and 4cm then the third side is .....cm.

A. 9

B. 6

C. 6.1

D. 5

Answer: D

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84. $\Delta ABC \sim \Delta PQR$, AB:PQ=3:4 then ar ΔABC: ar ΔPQR=.....

A. $9:16$

B. $9:1$

C. $16:9$

D. None

Answer: A

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85. IF $8^2 + 15^2 = k^2$ then k=.....

A. 16

B. 17

C. 19

D. 20

Answer: B

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86. The angles of a triangle arc in the ratio 1:2:3 then the largest angle is.....

A. 70°

B. 60°

C. 90°

D. 20°

Answer: C

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87. Straight angle means.....

A. 180°

B. 190°

C. 200°

D. 100°

Answer: A

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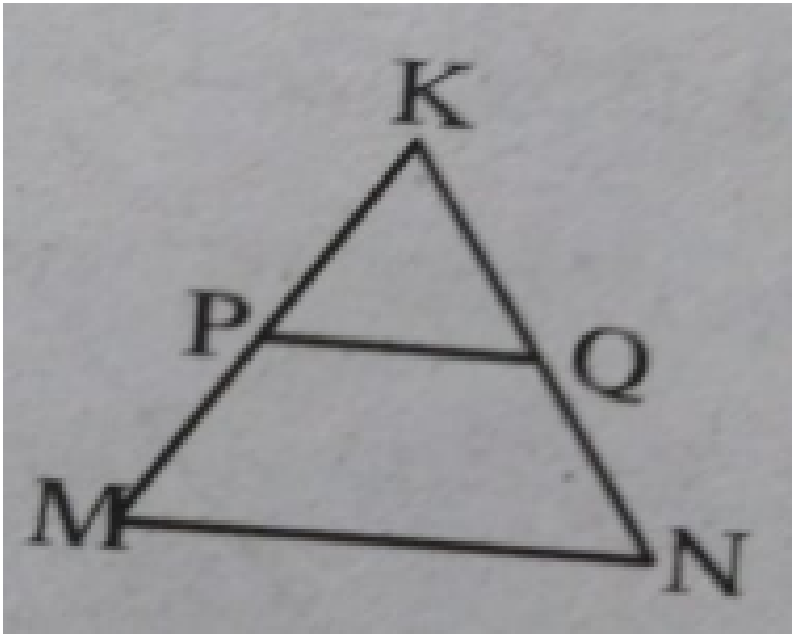
88. In the figure ,$PQ \parallel MN$, $\frac{KP}{PM} = \frac{4}{13}$ and KN=20.4 cm then KQ= .....cm.



A. 6.3

B. 4.8

C. 1.8

D. 2.8

Answer: B

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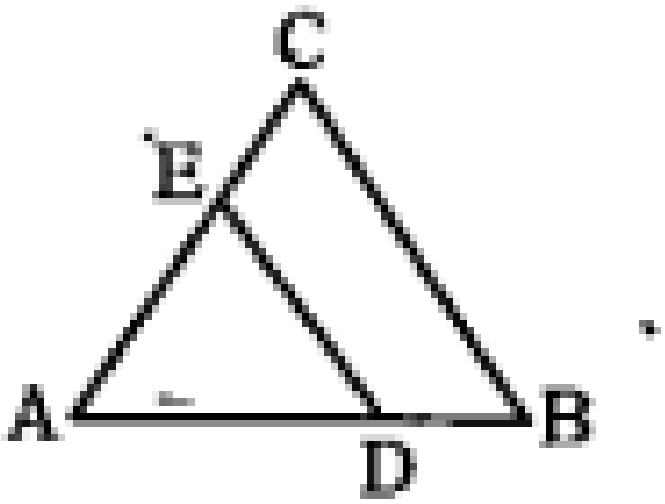
89. In the figure DE/BC if $AD = x$, $AE = x + 2, DB = x - 2$ and $CE = x - 1$ then

$x = \ldots\ldots\ldots\ldots\ldots\ldots$



A. 4

B. 5

C. 6

D. 7

Answer: A

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90. $\Delta ABC \sim \Delta DEF$ if DE:AB=2:3 and arΔDEF=44sq. Units then arΔABC= .....sq. units.

A. 90

B. 101

C. 99

D. 110

Answer: C

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