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Second Terminal Examination 2012

Mathematics

1) Sum of angles in a polygon = (n-2) 180^0

= (8-2) 180^0

= 6 x 180^0=1080^0

Measure of one angle = $\frac{1080}{8} = 135^0$

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2) Measure of one external angle = 120^0

Number of external angles = $\frac{360}{120} = 3$

Number of sides = 3

The given polygon is equilateral triangle

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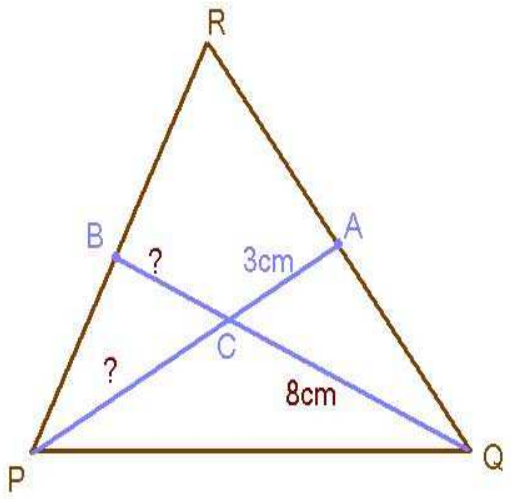
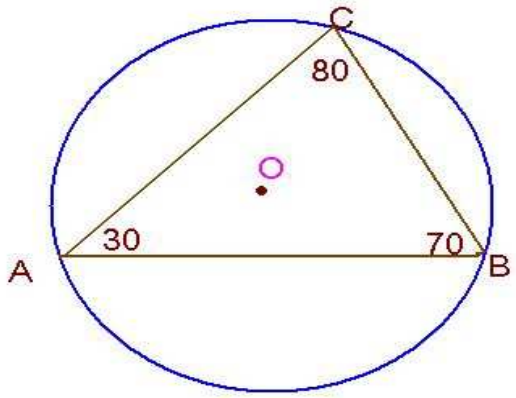
3)



PC : AC = 2:1 , AC=3cm hence PC = 6cm

QC : BC = 2:1 , QC=8cm hence BC = 4cm

4)



AB is the largest chord of the circle and BC is the smallest chord. Distance from the centre increases length of chord decreases hence the side BC is farthest from the centre of the circle.

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5) Let the price of one Orange = 'x' and price of one apple be 'y'

Then **5x+2y =125---------- (1)**

2x+3y =105 ----------(2)

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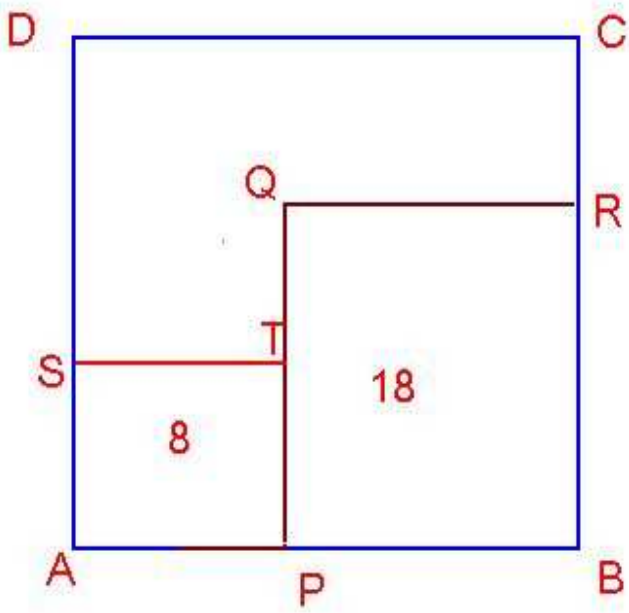
6) $\frac{x}{y} = \frac{5}{7}$

7x = 5y

$$\frac{7x+3y}{7x-3y} = \frac{5y+3y}{5y-3y} = \frac{8y}{2y} = 4$$

7)



$AP^2 = 8$, **AP=** $\sqrt{8}$

$BP^2 = 18$, BP = $\sqrt{18}$

AB = $\sqrt{8}$ + $\sqrt{18}$ = $2\sqrt{2} + 3\sqrt{2} = 5\sqrt{2}$

Total area of cultivation land = $5\sqrt{2}$ **x** $5\sqrt{2}$ = 50 ചതുരശ്രമീ

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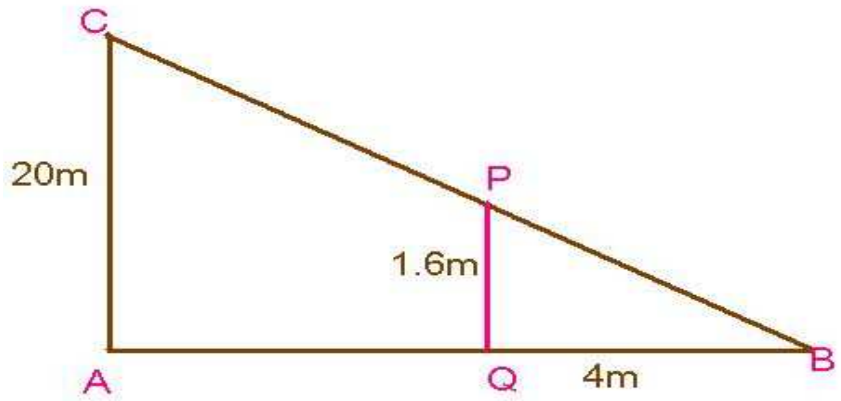
8)

Mean = $\frac{324.8}{10} = 32.48$

Median = 30.6

Mode = 30

9)



<A = <Q = 90^0

<B is a common angle for Δ ABC and ΔQBP

Hence Δ ABC and ΔQBP are similar. In similar triangles sides opposite to equal angles are proportionate

AC : PQ = AB : QB

20 : 1.6 = AB : 4

1.6 AB = 80

AB = 80/1.6 = 50m

AQ =50-4 =46m

The person is 46m away from the foot of the post

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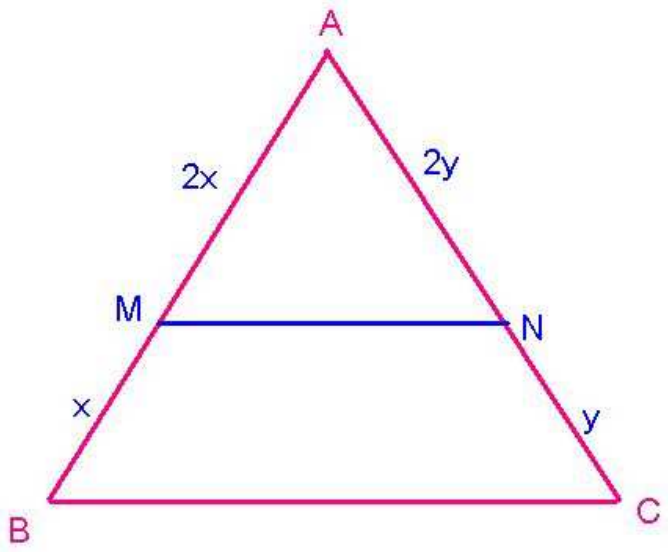
10)

Let breadth of the rectangle =’x’ then length is ‘x+3’

Perimeter = 2(x+3+x) = 2(2x+3) = 4x+6

11)



It is given as MN divides AB and AC in the ratio 2:1

Let MB=’x’ then AM=2x in the same way if NC=’y’ then AN=2y

Consider ΔABC and ΔAMN

AB:AM = 3:2

Also AC:AN=3:2

<A=<A(Common angle)

Hence Δ ABC and ΔQBP are similar. In similar triangles sides opposite to equal angles are proportionate

Given as MN=10 cm

BC:MN = 3:2

BC:10 =3:2

2BC =30 and BC=15cm

12) Area of triangle = $\sqrt{21x8x7x6}$ = $\sqrt{3x7x2x2x2x7x2x3}$

= 3 x 7 x 2 x 2 = 84 sq.cm

$$\frac{1}{2} x14xh = 84$$

7h = 84

h = 84/7 = 12cm

Length of perpendicular Ravi constructed = 12cm

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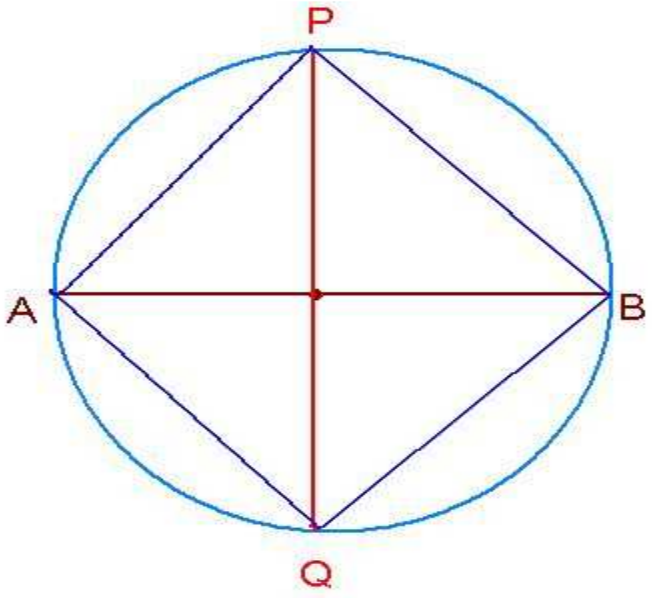
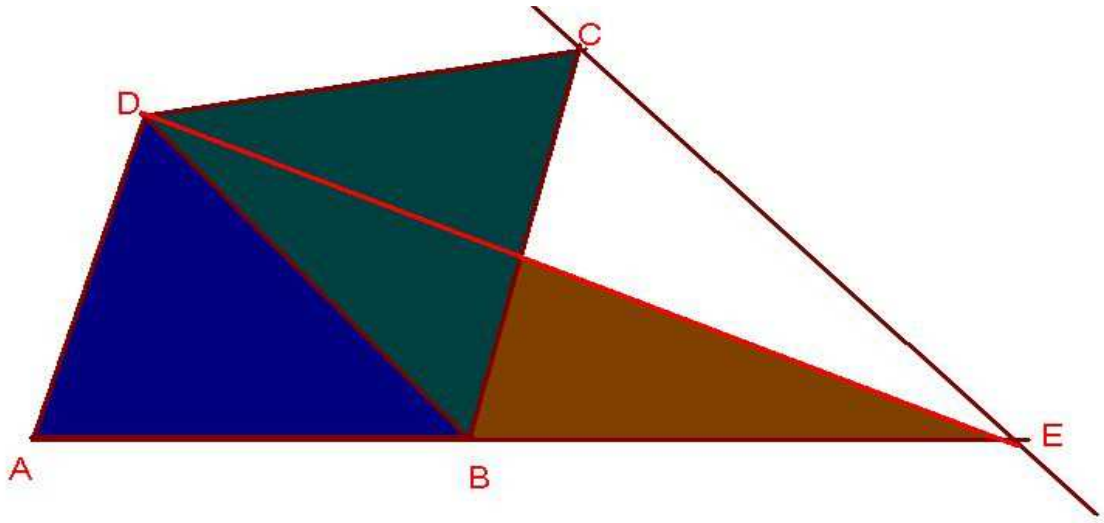
13)

Draw a circle of suitable radius and draw a diameter AB. Construct the perpendicular bisector of AB. Let the perpendicular bisector meet the circle at P,Q then APBQ is the required square



Ratio of length of diagonal to length of one side = $\sqrt{2} \approx 1.414$

14)



Area of ΔBDC = Area of ΔBDE (Triangles with same base and between same parallels are of equal area)

Combined area of ΔBDC and ΔADB gives the area of quadrilateral ABCD

Area of ΔADE is equal to the area of quadrilateral ABCD

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15)

Let Sainaba's age be 'x' and that of Rema's is 'y'

x+y =64----------(1)

x-y =12----------(2)

(1)+(2) **2x = 76 then x= 38**

y= 26

Sainaba's age is 38 and Rema's age is 26

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16) Draw frequency polygon from the data given in the table

17)

Let the sides of the larger square be 'x' and that of smaller square be 'y'

Then 4x+4y = 52 or x+y = 13---------- (1)

$x^2-y^2 = 91$

(x+y)(x-y) = 91

13 (x-y)=91 or x-y = 7 ----------(2)

Solving (1) and (2) we get x=10 and y=3

One side of larger square= 10cm and one side of smaller square is 3cm

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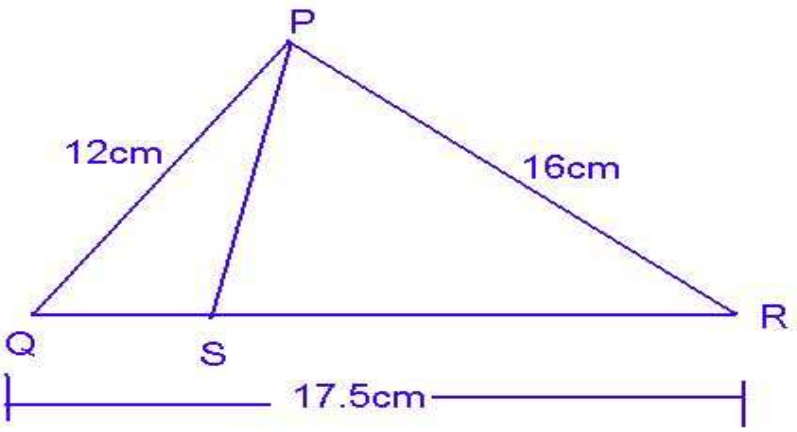
18)



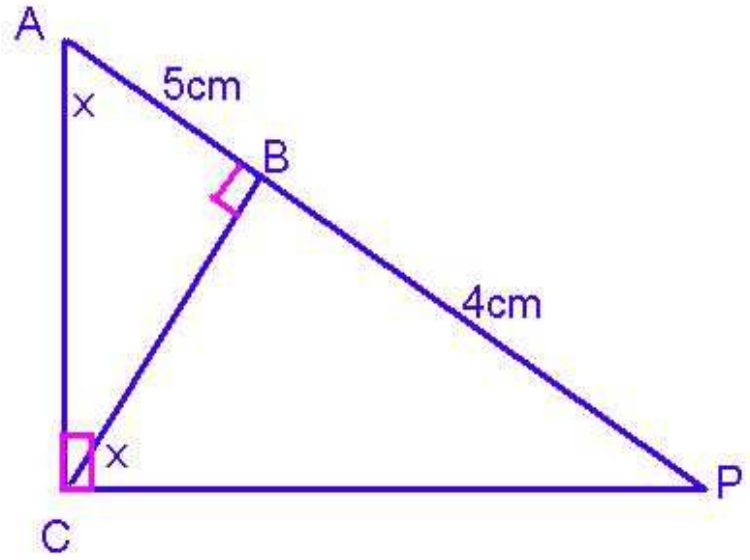
a) QS:SR = 12:16 = 3:4

b) QS = $17.5 x \frac{3}{7} = 7.5 cm$

SR = $17.5 x \frac{4}{7} = 10 cm$

19) Draw quadrilateral ABCD with the given measurements then construct a triangle whose area is equal to the area of quadrilateral ABCD using the idea of question number 14

20)



The question is incomplete it should be noted be noted that <ACP= ABC=90^0

<A = <PBC =x (given)

Hence Δ APC and ΔBPCare similar. In similar triangles sides opposite to equal angles are proportionate

PA : PC = PC :PB

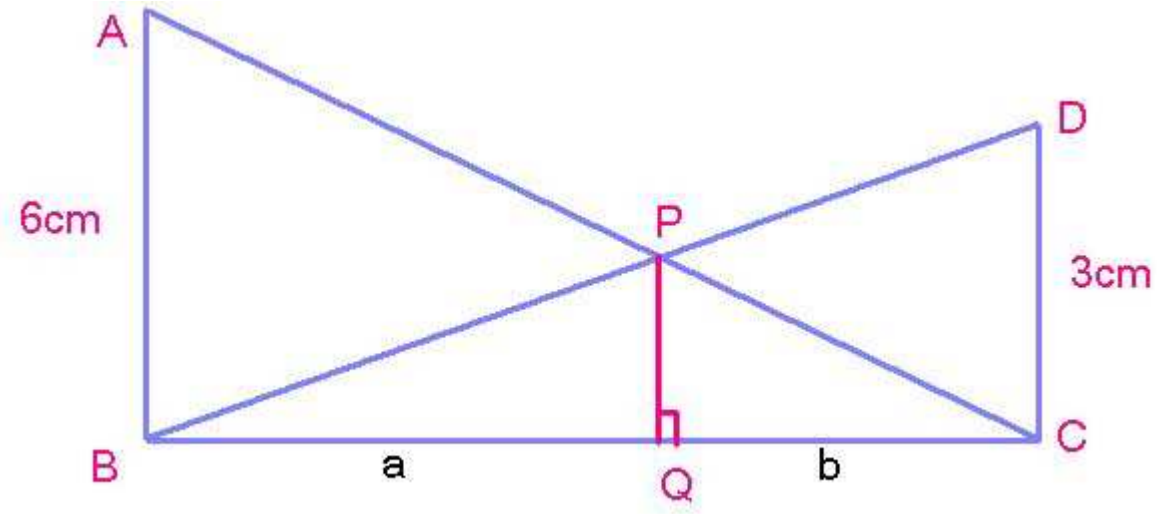
Hence PA x PB = PC^2

9 x 4 = PC^2

36 = PC^2 hence PC =6cm

21) construct the triangle

22)



Let BQ= 'a' and CQ='b' then BC= a+b

Consider ΔBCD and ΔBQP

<DCB = BQP =90^0

<B=<B (common angle)

Hence the triangles are similar. Sides opposite to equal angles are proportionate

CB : BQ = CD:PQ

a+b : a = 3:PQ

$$\frac{a+b}{a} = \frac{3}{PQ}$$

$$a = \frac{(a+b)PQ}{3}$$ **---------- (1)**

Consider ΔCBA and ΔCQP

<CBA = <CQP = 90^0

<C =<C (C0mmon angle)

Hence the triangles are similar. Sides opposite to equal angles are proportionate

CB:CQ = AB:PQ

a+b : b = 6:PQ

$$\frac{a+b}{b} = \frac{6}{PQ}$$

$$b = \frac{(a+b)PQ}{6}$$ **----------(2)**

(1) +2)

a+b = $\frac{(a+b)PQ}{3} + \frac{(a+b)PQ}{6}$

$$a+b = (a+b)PQ(\frac{1}{3}+\frac{1}{6})$$

$$1 = PQ(\frac{9}{18})$$

$$PQ = \frac{18}{9} = 2\,cm$$

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23) Prepare a frequency table