Career Launcher

CAT Night CLasses

Quantitative Aptitude

Geometry - 1

Plane Geometry

Introduction

1) How would you find the shortest distance between two points ?

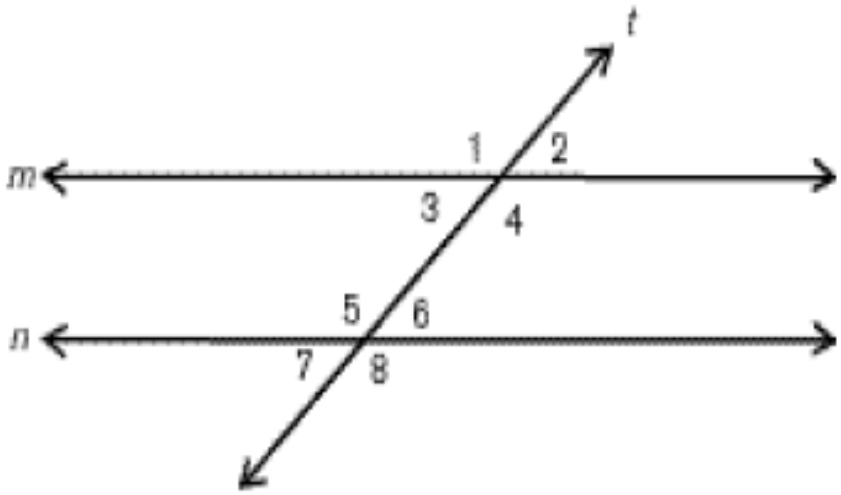
2) What is meant by the distance between a
a) point and a straight line ?
b) between 2 straight lines

3) AB = 5cm ; AC = 7 cm. Which of the following is/are possible for AC ?

a) 1.5 cm
b) 2 cm
c) 10 cm
d) 12 cm
e) 14 cm

Lines

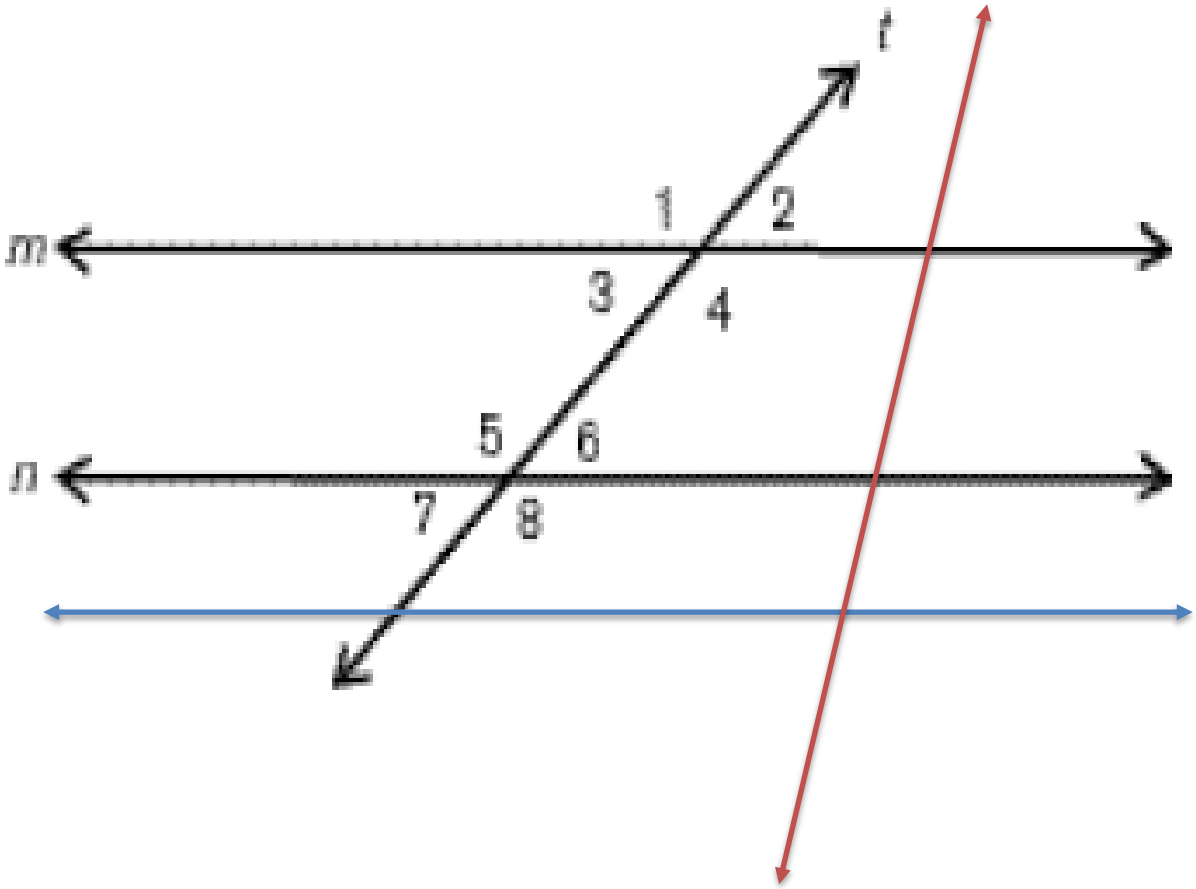
Straight lines - Angles; Parallel Lines



Vertically Opposite angles

Alternate Angles

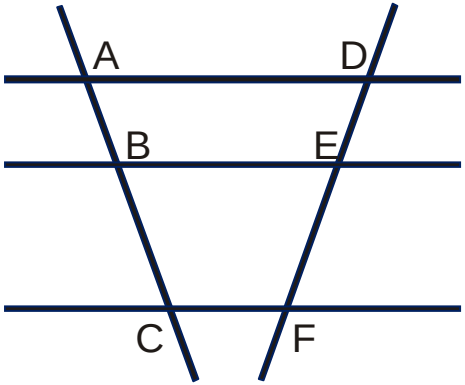
Corresponding angles



Ratio of intercepts for two transversals is the same

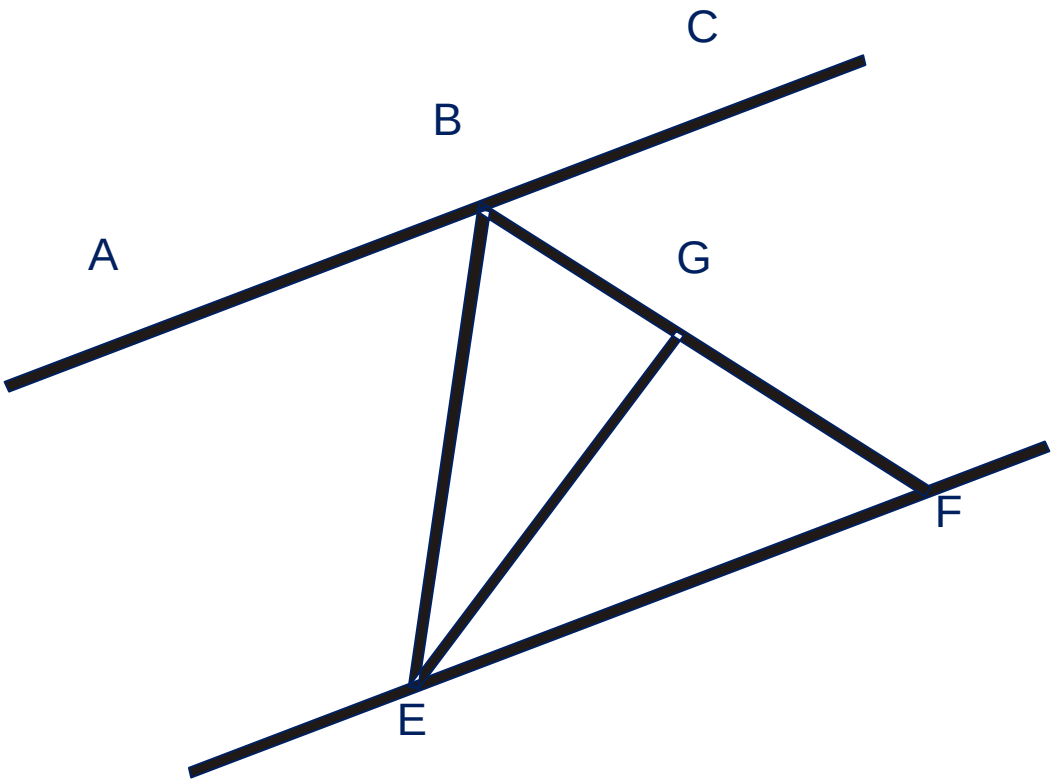
4)

Three parallel lines are cut by two transversals as shown in the given figure. If AB = 4 cm, BC = K cm and DE = K cm and EF = 9, what is DF =



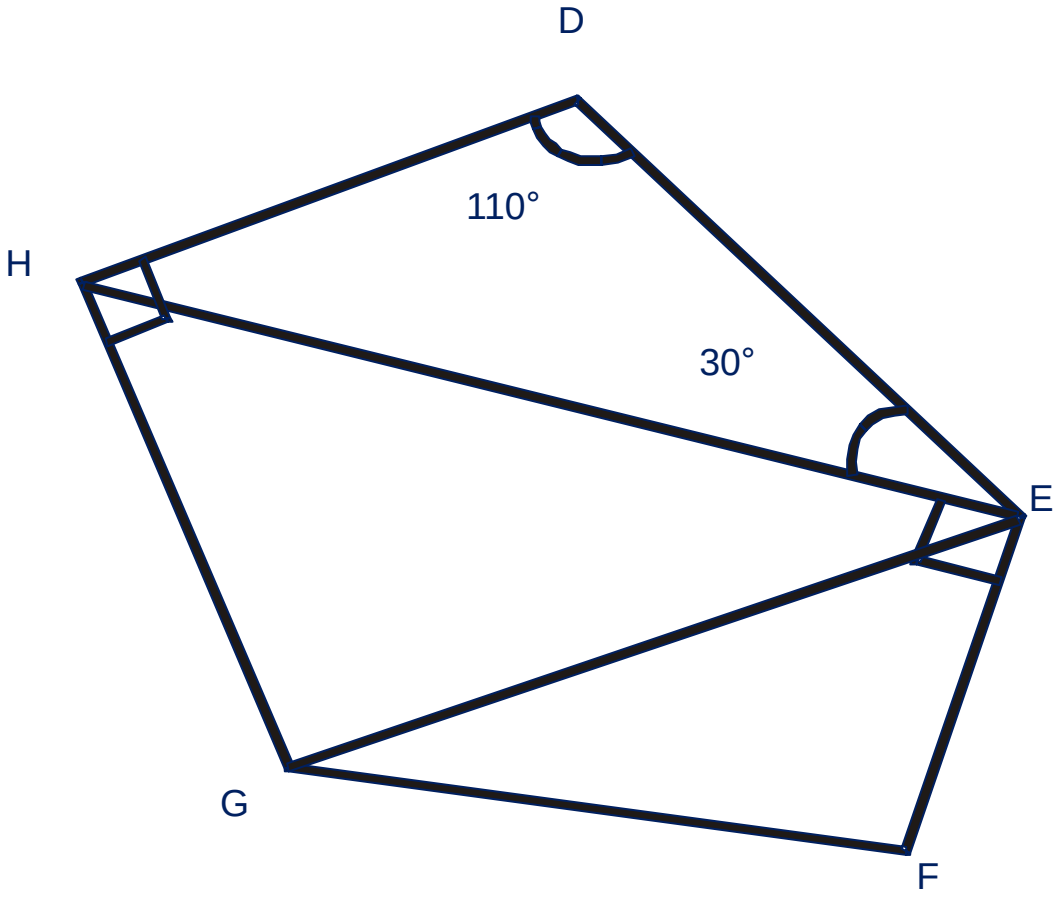
5) Lines AC and EF are parallel. BG and EG are angle bisectors of ∠CBE and ∠FEB respectively. If ∠CBF = 1/3 ∠ABF, find ∠BEF.

(1) 45° (2) 60° (3) 90° (4) None of these

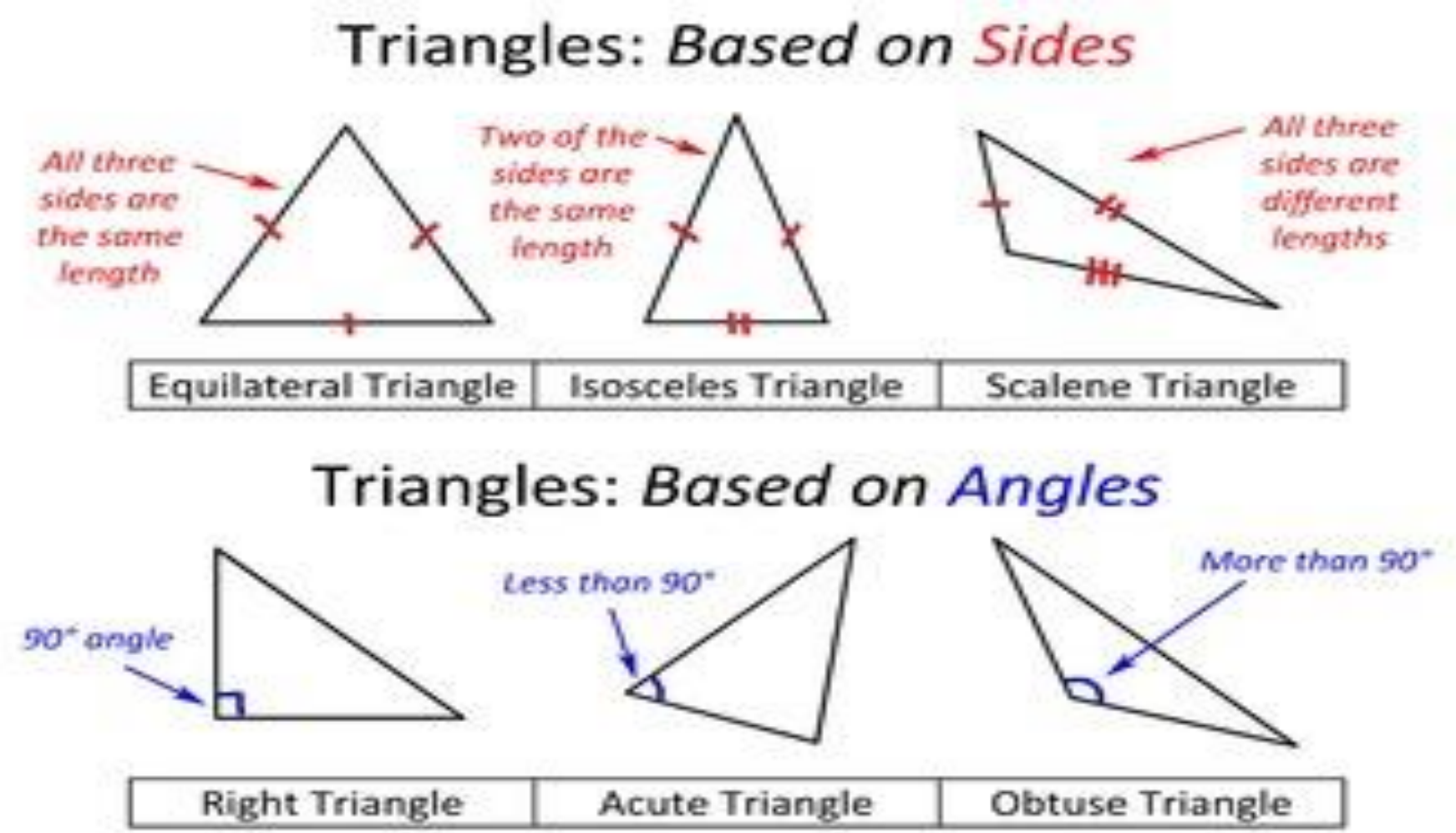


6) Given that HD || GE and GF || HE. Find the measure of the ∠GFE.

(1) 50° (2) 40° (3) 30° (4) None of these

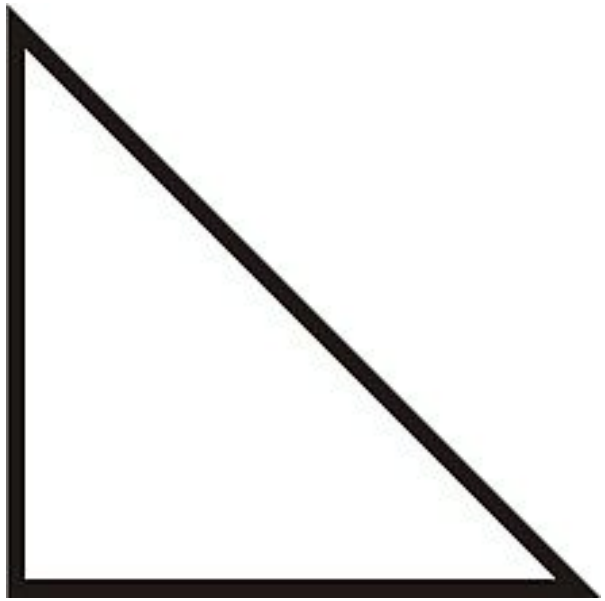


Types of Triangles

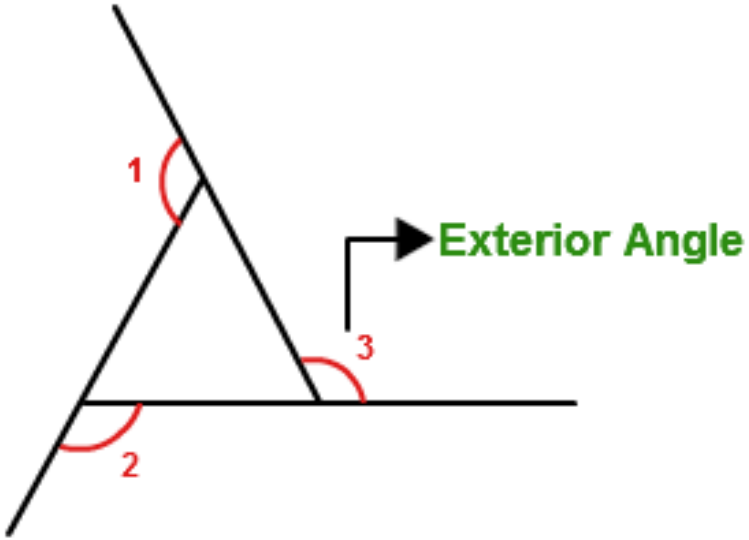


Side Properties : Sum of the sides, Difference of the sides

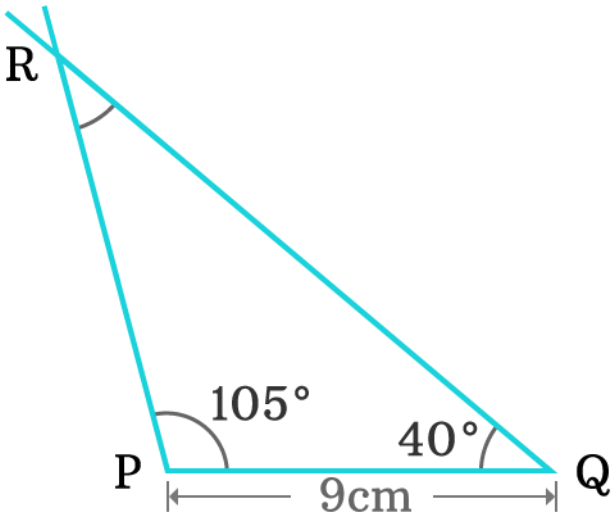
Pythagoras Theorem



Angle properties : Exterior Angle, Angle – Side relationship
Complementary, Supplementary



Area of a Triangle



= ½ x base x height

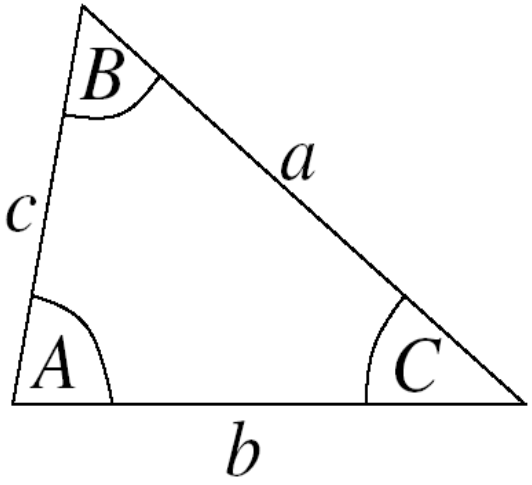
= pqr/4R

= r.s

= ½ (PR x PQ) Sin P
Or ½ (PR x RQ) Sin R
Or ½ (RQ x PQ) Sin Q

Heron's Formula for Area

Area of Equilateral triangle



Sine Rule

$$\frac{a}{\sin(A)} = \frac{b}{\sin(B)} = \frac{c}{\sin(C)} \quad \text{or} \quad \frac{\sin(A)}{a} = \frac{\sin(B)}{b} = \frac{\sin(C)}{c}$$

(for finding sides) (for finding angles)

Cosine Rule

$$a^2 = b^2 + c^2 - 2bc\cos(A) \quad \text{or} \quad \cos(A) = \frac{b^2 + c^2 - a^2}{2bc}$$

(for finding sides) (for finding angles)

#4) Mark True or False

a) If Angle BAC + Angle DAC = 180^o then BAD must be a straight line

b) Angle A in triangle ABC is 92^o. So AC is the longest side in the triangle.

c) Three sticks of length 1 m, 1.5 m and 2 m can form a triangle

d) Two triangles on the same base and having same height, must be congruent (identical)

e) Exterior Angle of any angle of a triangle is supplementary angle of the interior angle.

f) A line joining the midpoint of a side to the opposite vertex is perpendicular to the side, if it is an isosceles triangle.

g) If the all the heights to the bases is the same, then the triangle must be an equilateral triangle

h) If two of the sides of a triangle are 5 and 12, then the third side must be 13.

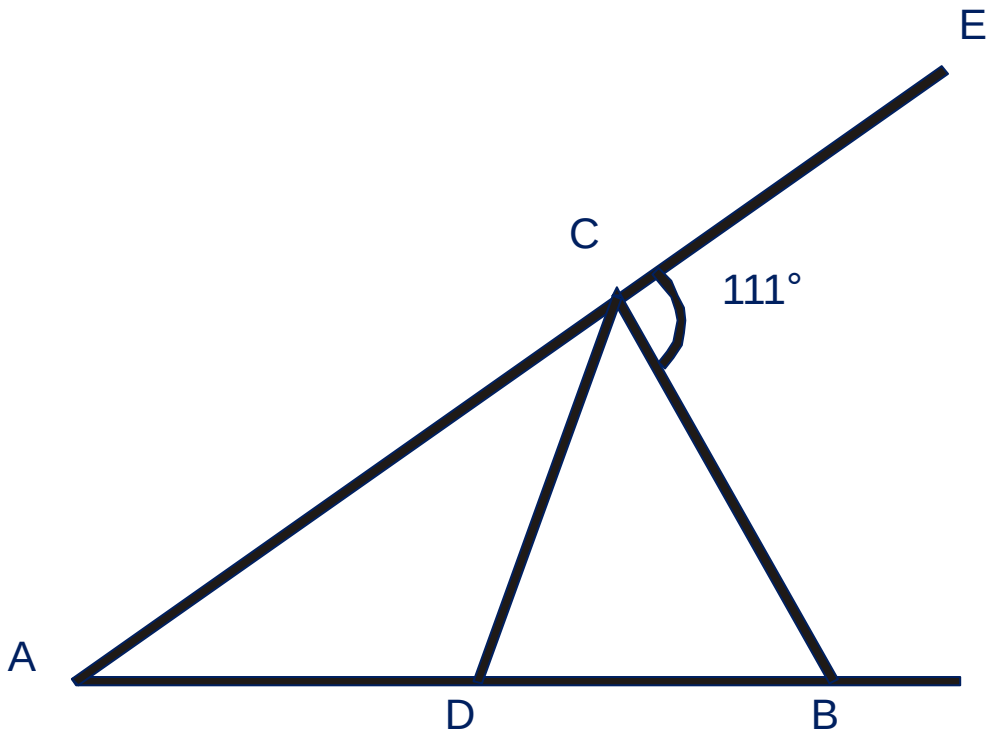
7) In the figure (not drawn to scale) given below, if AD = CD = BC and ∠BCE = 111°, how much is the value of ∠DBC?

1) 37°

(2) 21°

(3) 69°

(4) Cannot be determined



8) In a triangle ABC, D, E and F are points on AB, BC and CA respectively such that DE = BE and EF = EC. If angle A is 70^o then what is angle DEF in degrees?

9) An equilateral triangle BPC is drawn inside a square ABCD. What is the value of the angle APD in degrees?

(1) 75
(2) 90
(3) 120
(4) 135
(5) 150

10) Find the area of an equilateral triangle whose height is 12 cm.

(1) $24\sqrt{3}\,cm^2$ (2) $48\ cm^2$ (3) $48\sqrt{3}\,cm^2$ (4) $36\sqrt{3}\,cm^2$

11) If a, b, c are the sides of a triangle, and $a^2 + b^2 + c^2 = bc + ca + ab$, then the triangle is

(1) equilateral
(2) Isosceles
(3) right angled
(4) obtuse angled

12) The area of an isosceles triangle is 12 sq. cm. If one of the equal sides is 5 cm long, mark the option which can give the length of the base.

(1) 4 cm

(2) 6 cm

(3) 8 cm

(4) Both (2) and (3)

13) If the length of the sides of a triangle are in the ratio 3 : 4 : 5, find the ratio of the length of the altitudes to these respective sides

(1) 3 : 4 : 5

(2) 5 : 4 : 3

(3) 20 : 15 : 12

(4) Cannot be determined

14) Two triangles T_1 and T_2 have three sides of length 10, 10, 12 and 10, 10, 16 respectively. If A_1 and A_2 are the areas of T_1 and T_2 respectively, then the $|A_1 - A_2|$ is

15) Consider obtuse-angled triangles with sides 8 cm, 15 cm and x cm. If x is an integer, then how many such triangles exist?

(1) 5

(2) 21

(3) 10

(4) 15

(5) 14

16) How many triangles with altitudes 6, 8 and x can be formed such that x is an integer?

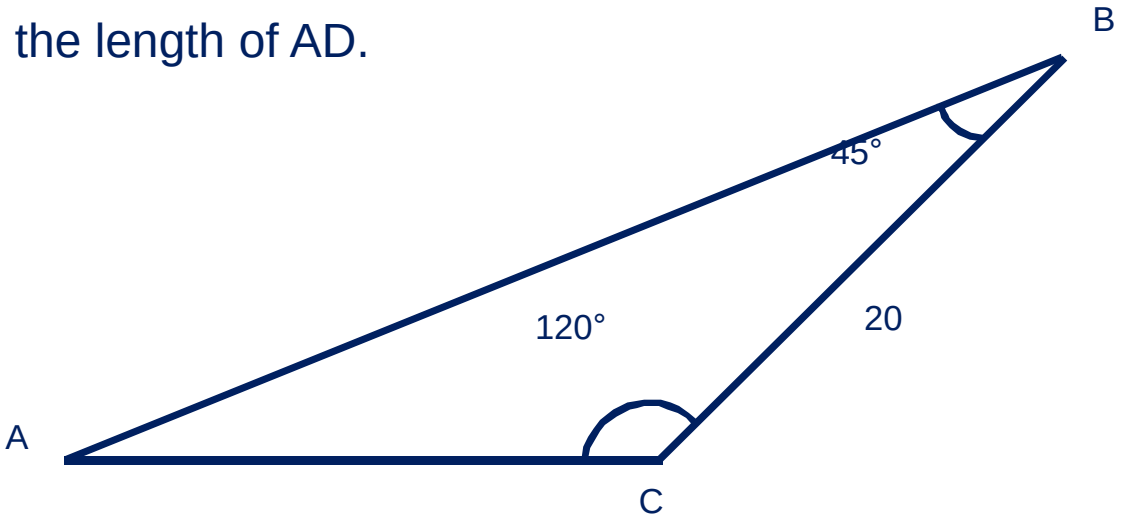
(1) 20 (2) 9 (3) 11 (4) 19

17) The area of a right-angled triangle is 40 sq cm and its perimeter is 40 cm. The length of its hypotenuse is

a. 16 cm b. 17 cm c. 18 cm d. none of these

18) In the figure given below, AD is drawn perpendicular to BC such that it meets BC produced at D. Find the length of AD.

$\left(\sin 15 = \frac{\sqrt{3}-1}{2\sqrt{2}}\right)$



(1) $10\left(3+\sqrt{3}\right)$ (2) $10\left(3-\sqrt{3}\right)$ (3) $5\left(3+\sqrt{3}\right)$

(4) $5\left(3-\sqrt{3}\right)$ (5) $10\left(\sqrt{3}+\sqrt{2}\right)$

19) If p^2, q^2 and r^2 are three sides of a triangle then the triangle with sides p, q and r is necessarily

(1) acute angled

(2) right angled

(3) obtuse angled

(4) Cannot be determined

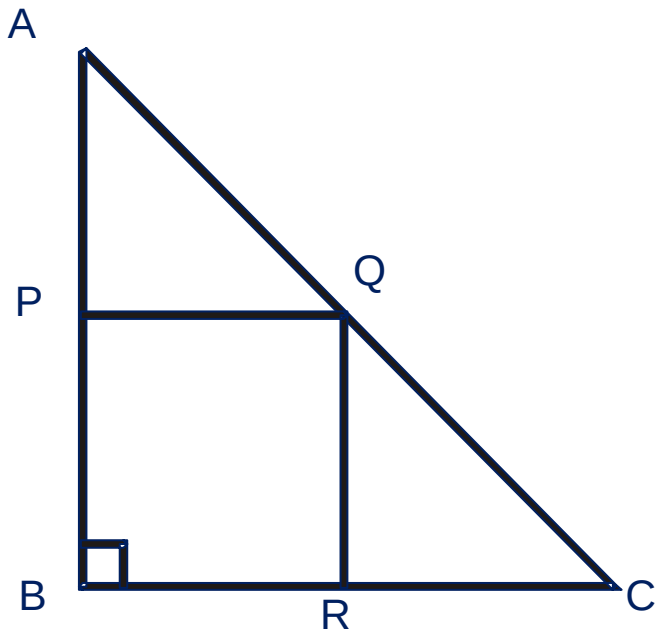
20) ABC is a right angled triangle with AB = 6 units and BC = 8 units. If PQRB is a square, find its area?

(1) 25

(2) $\frac{625}{36}$

(3) $\frac{576}{49}$

(4) 12.5



Career Launcher

CAT Night CLasses

Thank You


91-9650068470

shivku@careerlauncher.com