Value Based Questions

Que 1. Puneet prepared two posters on 'National Integration' for decoration on Independence Day on triangular sheets (say ABC and DEF). The sides AB and AC and the perimeter P_1 of ΔABC are respectively three times the corresponding sides DE and DF and the perimeter P^2 of ΔDEF. Are the two triangular sheets similar? If yes, find $\frac{ar(\Delta ABC)}{ar(\Delta DEF)}$.

What values can be inculcated through celebration of national festivals?

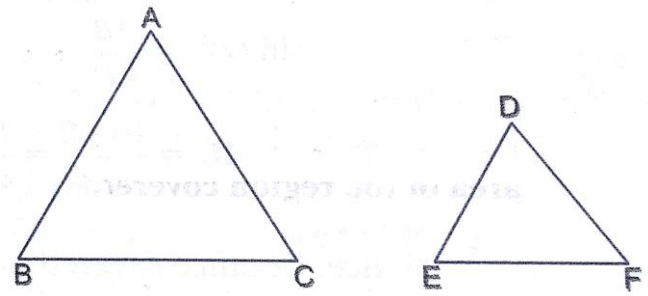

Fig. 4

Sol. In ΔABC and DEF

AB = 3 DE, AC = 3DF and $P_1 = 3p_2$

$\therefore \quad \frac{AB}{DE} = 3; \quad \frac{AC}{DF} = 3$

And $P_1 = 3p_2 \Rightarrow BC = 3EF$

$\Rightarrow \quad \frac{AB}{DE} = \frac{AC}{DF} = \frac{BC}{EF} = 3$

$\Rightarrow$ ΔABC ~ΔDEF (By SSS similarity)

$\Rightarrow \quad \frac{ar(\Delta ABC)}{ar(\Delta DEF)} = \left(\frac{AB}{DE}\right)^2 = (3)^2 = 9$

Unity of nation, fraternity, Patriotism.

Que 2. A man steadily goes 4 m due East and then 3 m due North.
(i) Find the distance from initial point to last point.
(ii) Which mathematical concept is used in this problem?
(iii) What is its value?

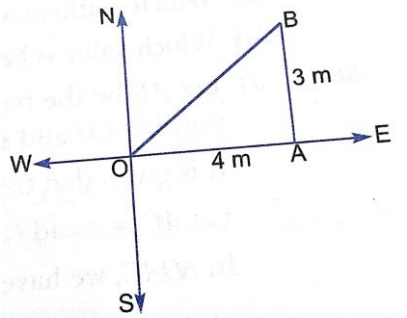

Fig. 5

Sol. (i) Let the initial position of the man be O and his final position be B. Since man goes 4 m due East and then 3 m due North. Therefore, ΔA0B is a right triangle right angled at A such that $OA = 4\,m\ and\ AB = 3m$

By Pythagoras Theorem, we have

$$OB^2 = OA^2 + AB^2$$

$$OB^2 = (4)^2 + (3)^2 = 16 + 9 = 25$$

$$OB = \sqrt{25} = 5\,m.$$

Hence, the man is at a distance of 5 m from the initial position.

(ii) Right-angled triangle, Pythagoras Theorem.

(iii) Knowledge of direction and speed saves the time.

Que 3. Two trees of height x and y are p metres apart.

(i) Prove that the height of the point of intersection of the line joining the top of each tree to the foot of the opposite tree is given by $\frac{xy}{x+y}\,m$.

(ii) Which mathematical concept is used in this problem?

(iii) What is its value?

Sol. (i) Similar to solution Q. 5, page 161.

(ii) Similarity of triangles.

(iii) Trees are helpful to maintain the balance in the environment. They should be saved at any cost.