Value Based Questions

Que 1. The perimeter of an isosceles triangle is 25 cm and its base is 7 cm. The teacher asked the students to find its area. Sapna answered $\frac{7}{4}\sqrt{15}\ cm^2$. Is she correct? Justify. Which values are depicted here?

Sol. Yes, 2b + a = 15

$\Rightarrow$ 2b + 7 = 15 $\Rightarrow$ b = 4

$\therefore$ Area of isosceles triangle = $\frac{7}{4}\sqrt{4b^2 - a^2} = \frac{7}{4}\sqrt{4 \times 4^2 - 7^2}$

$$= \frac{7}{4}\sqrt{64 - 49} = \frac{7}{4}\sqrt{15}cm^2$$

Curiosity, knowledge, truthfulness.

Que 2. An umbrella is made by stitching 10 triangular pieces of cloth of two different designs, each piece measuring 20 cm, 50 cm and 50 cm. How much cloth of each design is required by Mr. Amit if he wants to donate 20 such umbrellas to the children of slum areas?

Sol. The sides of triangular pieces are 20 cm, 50 cm and 50 cm.
Let, a = 20 cm, b = 50 cm, c = 50 cm

$\therefore$ Semi-perimeter, s = $\frac{a+b+c}{2} = \frac{20+50+50}{2}$

S = 60 cm

$\therefore$ Area of one triangular piece $= \sqrt{s(s-a)(s-b)(s-c)}$

$$= \sqrt{60(60-20)(60-50)(60-50)}$$

$= \sqrt{60 \times 40 \times 10 \times 10} = 200\sqrt{6}cm^2$ Cloth of each design

required for one umbrella = Area of 5 triangular pieces

$$= 5 \times 200\sqrt{6} = 1000\sqrt{6}cm^2$$

Cloth of each design required for 20 umbrella = $20 \times 1000\sqrt{6} = 20{,}000\sqrt{6}cm^2$
Helpful, caring, loving.

Que 3. A kite in the shape of a square with a diagonal 32 cm and an isosceles triangle of base 8 cm and side 6 cm each is to be made of three different shades as shown in figure. How much paper of each shade has been used in it?
How much paper of each shade is required by Arushi if she wants to donate 40 kites to the children of an orphanage? Which values does Arushi possess?

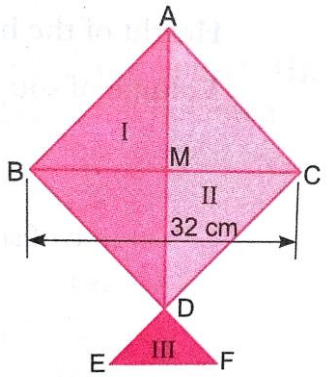

Fig. 13

Sol. As the diagonals of a square are equal bisect each other at right angle

∴ AD = BC =32 cm and AM = DM = $\frac{32}{2} = 16\ cm$

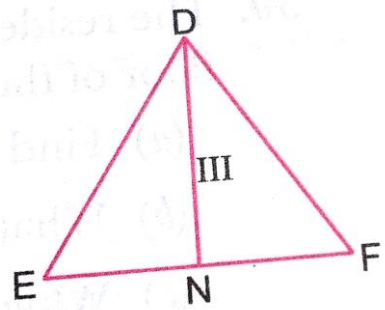

Fig. 14

Area of shade I = Area of shade II

= Area of ΔABD = $\frac{1}{2} \times AD \times BM$

$= \frac{1}{2} \times 32 \times 16 = 256\ Cm^2$

For the area of shade III

Area of isosceles ΔDEF = $\frac{a}{4}\sqrt{4b^2 - a^2}$

$= \frac{8}{4}\sqrt{4(6)^2 - 8^2} = 2\sqrt{144 - 64}$

$= 2\sqrt{80} = 8\sqrt{5}cm^2$

Area of shade I = Area of shade II = 256 cm^2

∴ Area of sheet of shade I required for making 40 kites

= Area of sheet of shade II required for making 40 kites

= 40 × 256 = 10240 cm^2

Area of sheet of shade III required for making 40 kites = $40 \times 8\sqrt{5} = 320\sqrt{5}cm^2$

Social, loving, caring.

Que 4. A craft mela is organised by welfare Association to promote the art and culture of tribal people. The pandal is to be decorated by using triangular flags around the field. Each flag has dimension 25 cm, 25 cm and 22 cm. Find the

area of cloth required for making 200 such flags. Which values are depicted here?

Sol. Area of cloth required for one flag

$= \sqrt{s(s-25)(s-25)(s-22)}$, where $s = \frac{25+25+22}{2}$ = 36 cm

Area of cloth required $= \sqrt{36(36-25)(36-25)(36-22)}$

$= \sqrt{36 \times 11 \times 11 \times 14}$

$= 6 \times 11\sqrt{14}\ cm^2 \ = \ 66\sqrt{14}$

Area of cloth required for 200 such flags = $66\sqrt{14} \times 200 = 13200\sqrt{14} cm^2$

Helpfulness, cooperation, beauty.

Que 5. A person donates cylindrical bowls of diameter 7 cm to a charitable hospital in which soup is served to patients. If the bowl is filled with soup to a height of 4 cm, how much soup needs to be prepared daily to serve 250 patients? Which values of the person are depicted here?

Sol. Radius of cylindrical bowl = $\frac{7}{2} cm = 3.5\ cm$

Height of the filled with soup (h) = 4 cm

Volume of soup for 1 patient = $\pi r^2 h$

$= \frac{22}{7} \times 3.5 \times 3.5 \times 4 \ = \ 154\ cm^3$

∴ Volume of soup for 250 patients = 250 ×154 cm^3 = 38500 cm^3

$= \frac{38500L}{1000}$ (∴ 1L = 1000 cm^3)

= 38.5 L

The person is kind heated, caring and contributing for the welfare of society.

Que 6. The resident of society decided to paint the hall of cancer detective centre in their premises. If the floor of the cuboidal hall has a perimeter equal to 260 m and height 6 m then
(a) Find the cost of painting of its four walls (including doors etc.) at the rate of ₹9 per m^2.
(b) What is the amount contributed by 50 people?
(c) Which value is depicted by the residents?

Sol. Perimeter = 2(l + b) = 260

= l + b = 130

(a) Surface area of four walls = 2h (l + b) = 2 × 6 × 130 = 1560 m^2

Cost of painting = 9 × 1560 = ₹14,040

(b) Amount contributed = $\frac{14040}{50} = ₹280.8$

(c) Cooperation, social cohesion.

Que 7. A person pays ₹2200 to children to paint the inner curved surface of a cylindrical vessel 10 m deep. If the cost of painting is at the rate ₹20 per m^2, find
(i) inner curved surface area of the vessel, (ii) radius of the base,
(iii) capacity of the vessel.
Which social is the person violating?

Sol. (i) Inner curved surface area of the vessel = $\frac{Total\ cost\ of\ painting}{Cost\ of\ painting\ per\ m^2}$

$$= \frac{₹2200}{20₹/m^2} = 110\ m^2$$

(ii) Let the radius of the base of the cylindrical vessel be r m.
Depth of the cylindrical vessel (h) = 10 m
Curved surface area of the cylindrical vessel = 2πrh

$\therefore$ $2\pi rh = 110 \Rightarrow 2 \times \frac{22}{7} \times r \times 10 = 110$

$\Rightarrow$ $r = \frac{110 \times 7}{2 \times 22 \times 10} = 1.75$ cm

(iii) Capacity of the cylindrical vessel = $\pi r^2 h$

$$= \frac{22}{7} \times (1.75)^2 \times 10\ m^3 = 96.25\ m^3$$

Child labour is abolished under the law. So, the person is violating this law.