

Holiday Assignment. (Mathematics).

→ Similar Figs - WB2 pg 12

8. (i) $\triangle ABC$ is similar to $\triangle APQ$.

$$\frac{AB}{AP} = \frac{5}{14}$$

$$\therefore \frac{AC}{AQ} = \frac{5}{14}$$

$$AQ = \frac{14}{5} \times 6$$

$$= 16.8 \text{ cm.}$$

$$CQ = 16.8 \text{ cm} - 6 \text{ cm}$$

$$= 10.8 \text{ cm.}$$

$$\therefore x = 10.8$$

$$\frac{BC}{PQ} = \frac{5}{14}$$

$$PQ = \frac{14}{5} \times 4$$

$$= 11.2 \text{ cm.}$$

$$\therefore y = 11.2$$

(iii) $\triangle ABC$ is similar to $\triangle APQ$.

$$\frac{BC}{PQ} = \frac{6}{10}$$

$$= \frac{3}{5}$$

$$\frac{AB}{AP} = \frac{3}{5}$$

$$AP = \frac{5}{3} \times 5$$

$$= 8\frac{1}{3} \text{ cm.}$$

$$x = 8\frac{1}{3}$$

$$\frac{AC}{AQ} = \frac{3}{5}$$

$$AC = \frac{3}{5} \times 9$$

$$= 5.4 \text{ cm.}$$

$$y = 5.4$$

(iv) $\triangle ABC$ is similar to $\triangle APQ$.

$$\frac{AB}{AP} = \frac{4}{6}$$

$$= \frac{2}{3}$$

$$\frac{BC}{PQ} = \frac{2}{3}$$

$$PQ = \frac{3}{2} \times 12$$

$$= 18 \text{ cm.}$$

$$\therefore x = 18$$

$$\frac{AC}{AQ} = \frac{2}{3}$$

$$AC = \frac{2}{3} \times 16$$

$$= 10\frac{2}{3} \text{ cm}$$

$$\therefore y = 10\frac{2}{3}$$

(ii) $\triangle ABC$ is similar to $\triangle APQ$.

$$\frac{AB}{AP} = \frac{8}{18}$$

$$= \frac{4}{9}$$

$$\frac{AC}{AQ} = \frac{4}{9}$$

$$\therefore AQ = \frac{9}{4} \times 7$$

$$= 15.75 \text{ cm.}$$

$$\therefore CQ = 15.75 \text{ cm} - 7 \text{ cm}$$

$$= 8.75 \text{ cm}$$

$$x = 8.75$$

$$\frac{BC}{PQ} = \frac{4}{9}$$

$$\therefore BC = \frac{4}{9} \times 24$$

$$= 10\frac{2}{3} \text{ cm.}$$

$$y = 10\frac{2}{3}$$

(v) $\triangle ABC$ is similar to $\triangle APQ$.

$$\frac{BC}{PQ} = \frac{10}{18}$$

$$= \frac{5}{9}$$

$$\frac{AC}{AQ} = \frac{5}{9}$$

$$AC = \frac{5}{9} \times 12$$

$$= 6\frac{2}{3} \text{ cm.}$$

$$\therefore x = 6\frac{2}{3} //$$

$$\frac{AB}{AP} = \frac{5}{9}$$

$$AP = \frac{9}{5} \times 8$$

$$= 14.4 \text{ cm.}$$

$$PC = 14.4 \text{ cm} - 6\frac{2}{3} \text{ cm}$$

$$= 7\frac{11}{15} \text{ cm}$$

$$\therefore y = 7\frac{11}{15} //$$

(vi) $\triangle ABC$ is similar to $\triangle APQ$.

$$\frac{AB}{AP} = \frac{12}{8}$$

$$= \frac{3}{2}$$

$$\frac{AC}{AQ} = \frac{3}{2}$$

$$AQ = 5 \text{ cm.}$$

$$\therefore AP = 2 \times 5$$

$$= 10 \text{ cm.}$$

$$x = 10 //$$

$$\frac{BC}{PQ} = \frac{3}{2}$$

$$BC = \frac{3}{2} \times 15$$

$$= 22.5 \text{ cm.}$$

$$y = 22.5 //$$

(vii) $\triangle ABC$ is similar to $\triangle APQ$.

$$\frac{BC}{PQ} = \frac{8}{6}$$

$$= \frac{4}{3}$$

$$BP = 3 \text{ cm.}$$

$$\frac{AB}{AP} = \frac{4}{3}$$

$$AP = 3 \times 3 \text{ cm.}$$

$$= 9 \text{ cm.}$$

$$\therefore x = 9. //$$

$$CQ = 2.8 \text{ cm.}$$

$$\frac{AC}{AQ} = \frac{4}{3}$$

$$AQ = 3 \times 2.8 \text{ cm}$$

$$= 8.4 \text{ cm.}$$

$$\therefore y = 8.4 //$$

(viii) $\triangle ABC$ is similar to $\triangle APQ$.

$$\frac{BC}{PQ} = \frac{12}{7}$$

$$\frac{AB}{AP} = \frac{12}{7}$$

$$AB = \frac{18}{7} \times 7$$

$$= 23\frac{1}{7} \text{ cm}$$

$$BP = 23\frac{1}{7} - 9 \text{ cm}$$

$$= 14\frac{1}{7} \text{ cm.}$$

$$\therefore x = 14\frac{1}{7} //$$

$$\frac{AC}{AQ} = \frac{12}{7}$$

$$AC = \frac{18}{7} \times 8$$

$$= 20\frac{4}{7} \text{ cm.}$$

$$CQ = 20\frac{4}{7} \text{ cm} - 8 \text{ cm}$$

$$= 12\frac{4}{7} \text{ cm.}$$

$$\therefore y = 12\frac{4}{7} //$$

9. $\triangle ABC$ is similar to $\triangle APQ$.

$\triangle ACR$ is similar to $\triangle QAK$.

$$\frac{BC}{PQ} = \frac{4}{7}$$

$$\frac{AC}{AQ} = \frac{4}{7}$$

$$AQ = \frac{7}{4} \times 6$$

$$= 10.5 \text{ cm}$$

$$(i) \therefore CQ = 10.5 \text{ cm} - 6 \text{ cm} \\ = 4.5 \text{ cm} //$$

$$\frac{CQ}{AQ} = \frac{4.5}{10.5}$$

$$= \frac{3}{7}$$

$$\frac{CR}{AK} = \frac{3}{7}$$

$$(ii) \therefore CR = \frac{3}{7} \times 12$$

$$= 5\frac{1}{7} \text{ cm} //$$

10. $\triangle ABC$ is similar to $\triangle DBA$.

$$\frac{AB}{BA} = \frac{24}{16}$$

$$= \frac{3}{2}$$

$$\frac{PQ}{PB} = \frac{3}{2}$$

$$(i) \therefore PB = \frac{2}{3} \times 18 \text{ cm}$$

$$= 12 \text{ cm} //$$

$$\frac{PR}{PA} = \frac{3}{2}$$

$$(ii) \therefore PR = \frac{3}{2} \times 9 \text{ cm}$$

$$= 13.5 \text{ cm} //$$

11. Actual length of the tank.

$$\rightarrow \frac{8}{4} \times 3.2 \text{ m}$$

$$= 6.4 \text{ m} //$$

12. True - All angles in every equilateral $\triangle$ is always 60° .

13. False - Squares come in different sizes but congruent squares need to be of the same size.

14. True - Circles do not have angles therefore they are all similar.

15. False - semi-circles come in different sizes but congruent semi-circles need to be of the same size.

16. True - The faces making up cube are all squares of the same size.

17. False - cubes are of different sizes, and so would their faces be, therefore they need not be congruent to each other.

18. False - Although the angles in a rectangle are always 90° , their length and breadth varies, therefore rectangles are not necessarily similar.

19. False - Their degree of angles can be different, therefore they need not be similar.

20. True - All angles are always 90° and the ratio of the length to the other square is always equal.

21. True - opposite angles of a parallelogram are similar.

22. False - Angles opposite need not be the same.

23. False -

24. (i). Height of smaller bottle
 $\rightarrow \frac{1.2}{2} \times 8.2 \text{ cm}$
 $= 5.04 \text{ cm.} //$

(ii). Length of larger bottle
 $\rightarrow \frac{2}{1.2} \times 7.6 \text{ cm}$
 $= 12\frac{2}{3} \text{ cm.} //$

25. (i) Radius of larger cone
 $\rightarrow \frac{24}{10} \times 5.5 \text{ cm}$
 $= 13.2 \text{ cm.} //$

(ii). Circumference of smaller cone
 $\rightarrow \frac{10}{24} \times 84 \text{ cm}$
 $= 35 \text{ cm.} //$

26. (i) Width of $\square PQRS$
 $\rightarrow \frac{36}{24} \times 18 \text{ cm}$
 $= 27 \text{ cm.} //$

(ii) Length of $\square PQRS$
 $\rightarrow \frac{36}{18} \times 24 \text{ cm}$
 $= 48 \text{ cm.} //$