

# ANSWERS

## Chapter 1 Similarity

### Practice set 1.1

1.  $\frac{3}{4}$       2.  $\frac{1}{2}$       3. 3      4. 1:1      5. (1)  $\frac{BQ}{BC}$ , (2)  $\frac{PQ}{AD}$ , (3)  $\frac{BC}{DC}$ , (4)  $\frac{DC \times AD}{QC \times PQ}$

### Practice set 1.2

1. (1) is a bisector.      (2) is not a bisector.      (3) is a bisector.  
 2.  $\frac{PN}{NR} = \frac{PM}{MQ} = \frac{3}{2}$ , therefore line NM  $\parallel$  side RQ      3. QP = 3.5      5. BQ = 17.5  
 6. QP = 22.4      7. x = 6 ; AE = 18      8. LT = 4.8      9. x = 10  
 10. Given, XQ, PD, Given,  $\frac{XR}{RF} = \frac{XQ}{QE}$ , Basic propotionality theorem,  $\frac{XP}{PD} = \frac{XR}{RF}$

### Practice set 1.3

1.  $\triangle ABC \sim \triangle EDC$ , AA test      2.  $\triangle PQR \sim \triangle LMN$  ; SSS test of similarity  
 3. 12 metre      4. AC = 10.5      6. OD = 4.5

### Practice set 1.4

1. Ratio of areas = 9 : 25      2.  $\boxed{PQ^2}$ ,  $\boxed{\frac{4}{9}}$       3.  $\boxed{A(\triangle PQR)}$ ,  $\frac{16}{25}$ ,  $\frac{4}{5}$   
 4. MN = 15      5. 20 cm      6.  $4\sqrt{2}$   
 7.  $\boxed{PF}$ ;  $\boxed{x}$  +  $\boxed{2x}$ ;  $\boxed{\angle FPQ}$ ;  $\boxed{\angle FQP}$ ;  $\frac{DF^2}{PF^2}$ ;  $\boxed{20}$ ;  $\boxed{45}$ ;  $\boxed{45} - \boxed{20}$ ;  $\boxed{25 \text{ sq. unit}}$

### Problem set 1

1. (1) (B),      (2) (B),      (3) (B),      (4) (D),      (5) (A)  
 2.  $\frac{7}{13}$ ,  $\frac{7}{20}$ ,  $\frac{13}{20}$       3. 9 cm      4.  $\frac{3}{4}$       5. 11 cm      6.  $\frac{25}{81}$       7. 4  
 8. PQ = 80, QR =  $\frac{280}{3}$ , RS =  $\frac{320}{3}$       9.  $\frac{PM}{MQ} = \frac{PX}{XQ}$ ,  $\frac{PM}{MR} = \frac{PY}{YR}$ ,  
 10.  $\frac{AX}{XY} = \frac{3}{2}$       12.  $\frac{\boxed{3}}{\boxed{2}}$ ,  $\frac{\boxed{3} + \boxed{2}}{\boxed{2}}$ ,  $\frac{\boxed{5}}{\boxed{3}}$ ,  $\boxed{AA}$ ,  $\frac{\boxed{5}}{\boxed{3}}$ ,  $\boxed{15}$

## Chapter 2 Pythagoras Theorem

### Practice set 2.1

1. Pythagorean triplets ; (1), (3), (4), (6)      2. NQ = 6      3. QR = 20.5

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4.  $RP = 12$ ,  $PS = 6\sqrt{3}$

5.  $\boxed{\text{Given}}$ ,  $\boxed{45^\circ}$ ,  $\boxed{\frac{1}{\sqrt{2}}}$ ,  $\boxed{\frac{1}{\sqrt{2}}}$ ,  $\boxed{\frac{1}{\sqrt{2}}}$ ,  $\boxed{2}$

6. side =  $5\sqrt{2}$  cm, perimeter =  $20\sqrt{2}$  cm      7. (1) 18 (2)  $4\sqrt{13}$  (3)  $6\sqrt{13}$       8. 37 cm  
10. 8.2 metre.

### Practice set 2.2

1. 12      2.  $2\sqrt{10}$       4. 18 cm

### Problem set 2

1. (1) (B), (2) (B), (3) (A), (4) (C), (5) (D), (6) (C), (7) (B), (8) (A).  
2. (1)  $a\sqrt{3}$ , (2) form a right angled triangle. (3) 61 cm, (4) 15 cm, (5)  $x\sqrt{2}$ , (6)  $\angle PRQ$ .  
3.  $RS = 6$  cm,  $ST = 6\sqrt{3}$  cm      4. 20 cm      5. side = 2 cm, perimeter = 6 cm  
6. 7      7.  $AP = 2\sqrt{7}$  cm      10. 7.5 km / hr      12. 8 cm      14. 8 cm  
15. 192 sq.unit      17. 58      18. 26

## Chapter 3 Circle

### Practice set 3.1

1. (1)  $90^\circ$ , tangent-radius theorem (2) 6 cm ; perpendicular distance  
(3)  $6\sqrt{2}$  cm (4)  $45^\circ$   
2. (1)  $5\sqrt{3}$  cm (2)  $30^\circ$  (3)  $60^\circ$       4. 9 cm

### Practice set 3.2

1. 1.3 cm      2. 9.7 cm      4. (3)  $110^\circ$       5.  $4\sqrt{6}$  cm

### Practice set 3.3

1.  $m(\text{arc DE}) = 90^\circ$ ,  $m(\text{arc DEF}) = 160^\circ$

### Practice set 3.4

1. (1)  $60^\circ$  (2)  $30^\circ$  (3)  $60^\circ$  (4)  $300^\circ$       2. (1)  $70^\circ$  (2)  $220^\circ$  (3)  $110^\circ$  (4)  $55^\circ$   
3.  $\angle R = 92^\circ$ ;  $\angle N = 88^\circ$       7.  $44^\circ$       8.  $121^\circ$

### Practice set 3.5

1.  $PS = 18$ ;  $RS = 10$ ,      2. (1) 7.5 (2) 12 or 6  
3. (1) 18 (2) 10 (3) 5      4. 4

### Problem set 3

1. (1) D (2) B (3) B (4) C (5) B (6) D (7) A (8) B (9) A (10) C.  
2. (1) 9 cm (2) in the interior of the circle (3) 2 locations, 12 cm  
3. (1) 6 (2)  $\angle K = 30^\circ$ ;  $\angle M = 60^\circ$       5. 10      6. (1) 9 cm (2) 6.5 cm

- (3)  $90^\circ$  ; MS : SR = 2 : 1      9.  $4\sqrt{3}$  cm
13. (1)  $180^\circ$       (2)  $\angle AQP \cong \angle ASQ \cong \angle ATQ$   
 (3)  $\angle QTS \cong \angle SQR \cong \angle SAQ$       (4)  $65^\circ, 130^\circ$       (5)  $100^\circ$       14. (1)  $70^\circ$   
 (2)  $130^\circ$       (3)  $210^\circ$       15. (1)  $56^\circ$       (2) 6      (3) 16 or 9      16. (1)  $15.5^\circ$   
 (2) 3.36      (3) 6      18. (1)  $68^\circ$       (2) OR = 16.2, QR = 13      (3) 13      21. 13

## Chapter 4 Geometric Constructions

### Problem set 4

1. (1) C      (2) A      (3) A

## Chapter 5 Co-ordinate Geometry

### Practice set 5.1

1. (1)  $2\sqrt{2}$       (2)  $4\sqrt{2}$       (3)  $\frac{11}{2}$       (4) 13      (5) 20      (6)  $\frac{29}{2}$
2. (1) are collinear.      (2) are not collinear.      (3) are not collinear.      (4) are collinear.
3. (-1, 0)      7. 7 or -5

### Practice set 5.2

1. (1, 3)      2. (1)  $\left(-\frac{1}{3}, -\frac{1}{3}\right)$       (2)  $\left(\frac{4}{7}, -\frac{11}{7}\right)$       (3)  $\left(0, \frac{13}{3}\right)$       3. 2:7      4. (-6, 3)
5. 2:5,  $k = 6$       6. (11, 18)      7. (1) (1, 3)      (2) (6, -2)      (3)  $\left(\frac{19}{3}, \frac{22}{3}\right)$
8. (-1, -7)      9.  $h = 7, k = 18$       10. (0, 2) ; (-2, -3)
11. (-9, -8), (-4, -6), (1, -4)      12. (16, 12), (12, 14), (8, 16), (4, 18)

### Practice set 5.3

1. (1) 1      (2)  $\sqrt{3}$       (3) slope cannot be determined.
2. (1) 2      (2)  $-\frac{3}{8}$       (3)  $\frac{5}{2}$       (4)  $\frac{5}{4}$       (5)  $\frac{1}{2}$       (6) slope cannot be determined.
3. (1) are collinear.      (2) are collinear.      (3) are not collinear.      (4) are collinear.  
 (5) are collinear.      (6) are collinear.
4.  $-5; \frac{1}{5}; -\frac{2}{3}$       6.  $k = 5$       7.  $k = 0$       8.  $k = 5$

### Problem set 5

1. (1) D      (2) D      (3) C      (4) C
2. (1) are collinear.      (2) are collinear.      (3) are not collinear.      3. (6, 13)      4. 3:1



5.  $(-7, 0)$     6. (1)  $a\sqrt{2}$  (2) 13    (3)  $5a$     7.  $\left(-\frac{1}{3}, \frac{2}{3}\right)$
8. (1) Yes, scalene triangle (2) No. (3) Yes, equilateral triangle    9.  $k = 5$
13.  $5, 2\sqrt{13}, \sqrt{37}$     14.  $(1, 3)$     16.  $\left(\frac{25}{6}, \frac{13}{6}\right)$ , radius =  $\frac{13\sqrt{2}}{6}$     17.  $(7, 3)$
18. Parallelogram    19. A(20, 10), P(16, 12), R(8, 16), B(0, 20).    20.  $(3, -2)$
21.  $(7, 6)$  and  $(3, 6)$     22. 10 and 0

## Chapter 6 Trigonometry

### Practice set 6.1

1.  $\cos\theta = \frac{24}{25}$  ;  $\tan\theta = \frac{7}{24}$     2.  $\sec\theta = \frac{5}{4}$  ;  $\cos\theta = \frac{4}{5}$
3.  $\operatorname{cosec}\theta = \frac{41}{9}$  ;  $\sin\theta = \frac{9}{41}$     4.  $\sec\theta = \frac{13}{5}$  ;  $\cos\theta = \frac{5}{13}$  ;  $\sin\theta = \frac{12}{13}$
5.  $\frac{\sin\theta + \cos\theta}{\sec\theta + \operatorname{cosec}\theta} = \frac{1}{2}$

### Practice set 6.2

- Height of the church is 80 metre.
- The ship is 51.90 metre away from the lighthouse.
- Height of the second building is  $(10 + 12\sqrt{3})$  metre.
- Angle made by the wire with the horizontal line is  $30^\circ$ .
- Height of the tree is  $(40 + 20\sqrt{3})$  metre.
- The length of the string is 69.20 metre.

### Problem set 6

1. (1) A    (2) B    (3) C    (4) A
2.  $\cos\theta = \frac{60}{61}$     3.  $\sin\theta = \frac{2}{\sqrt{5}}$  ;  $\cos\theta = \frac{1}{\sqrt{5}}$  ;  $\operatorname{cosec}\theta = \frac{\sqrt{5}}{2}$  ;  $\sec\theta = \sqrt{5}$  ;  $\cot\theta = \frac{1}{2}$
4.  $\sin\theta = \frac{5}{13}$  ;  $\cos\theta = \frac{12}{13}$  ;  $\operatorname{cosec}\theta = \frac{13}{5}$  ;  $\tan\theta = \frac{5}{12}$  ;  $\cot\theta = \frac{12}{5}$
6. Height of the building is  $16\sqrt{3}$  metre.
7. The ship is  $100\sqrt{3}$  metre away from the lighthouse.
8. Height of the second building is  $(12 + 15\sqrt{3})$  metre.
9. The maximum height that ladder can reach is 20.80 metre.

10. the plane was 1026 metre high at the time of landing.

## Chapter 7 Mensuration

### Practice set 7.1

1.  $11.79 \text{ cm}^3$       2.  $113.04 \text{ cm}^3$       3.  $1413 \text{ sq.cm}$  (by taking  $\pi = 3.14$ )      4.  $616 \text{ sq.cm}$   
5.  $21 \text{ cm}$       6.  $12 \text{ jugs}$       7.  $9 \text{ cm}$       8.  $273\pi \text{ sq.cm}$       9.  $20 \text{ tablets}$   
10.  $94.20 \text{ cm}^3$ ,  $103.62 \text{ sq.cm}$       11.  $5538.96 \text{ sq.cm}$ ,  $38772.72 \text{ cm}^3$   
12.  $1468.67\pi \text{ cm}^3$

### Practice set 7.2

1.  $10.780 \text{ litre}$       2. (1)  $628 \text{ sq.cm}$       (2)  $1356.48 \text{ sq.cm}$       (3)  $1984.48 \text{ cm}^3$

### Practice set 7.3

1.  $47.1 \text{ sq.cm}$       2.  $25.12 \text{ cm}$       3.  $3.85 \text{ sq.cm}$       4.  $214 \text{ sq.cm}$       5.  $4 \text{ cm}$   
6. (1)  $154 \text{ sq.cm}$       (2)  $25.7 \text{ sq.cm}$       (3)  $128.3 \text{ sq.cm}$       7.  $10.2 \text{ sq.cm}$   
8.  $7.3 \text{ cm}$  ;  $22 \text{ cm}$       9. (1)  $90^\circ$       (2)  $22 \text{ cm}$   
10. (1)  $12.83 \text{ sq.cm}$       (2)  $89.83 \text{ sq.cm}$       (3)  $115.5 \text{ sq.cm}$       11.  $3.5 \text{ cm}$   
12.  $x = 154 \text{ sq.cm}$  ;  $y = 38.5 \text{ sq.cm}$  ;  $z = 101.5 \text{ sq.cm}$   
13. (1)  $84.87 \text{ sq.cm}$       (2)  $25.67 \text{ sq.cm}$       (3)  $77.01 \text{ sq.cm}$       (4)  $7.86 \text{ sq.cm}$

### Practice set 7.4

1.  $3.92 \text{ sq.cm}$       2.  $9.08 \text{ sq.cm}$       3.  $0.65625 \text{ sq.unit}$       4.  $20 \text{ cm}$   
5.  $20.43 \text{ sq.cm}$  ;  $686.07 \text{ sq.cm}$

### Problem set 7

1. (1) A,      (2) D,      (3) B,      (4) B,      (5) A,      (6) A,      (7) D,      (8) C.  
2.  $20.35 \text{ litre}$       3.  $7830 \text{ balls}$       4.  $2800 \text{ coins}$  (by taking  $\pi = \frac{22}{7}$ )      5. Rs.  $6336$   
6.  $452.16 \text{ sq.cm}$  ;  $3385.94 \text{ gm}$       7.  $2640 \text{ sq.cm}$       8.  $243 \text{ metre}$   
9.  $150^\circ$  ;  $5\pi \text{ cm}$       10.  $39.28 \text{ sq.cm}$

