ANSWERS

Practice Set 1 **1.** --- **2.** --- **3.** In the interior of the triangle **4.** On the hypotenuse of right-angled triangle **5.** To draw circumcentre of the triangle.

Practice Set 2 --- Practice Set 3 ---

Practice Set 4 --- Practice Set 5 ---

Practice Set 6 : **1.**(i) Seg MG ≅ Seg GR

(ii) Seg MG ≅ Seg NG

(iii) Seg GC ≅ Seg GB

(iv) Seg GE ≅ Seg GR

2. (i) Seg AB ≅ Seg WA

(ii) Seg AP ≅ Seg YC

(iii) Seg AC ≅ Seg PY

(iv) Seg PW ≅ Seg BY

(v) Seg YA ≅ Seg YQ

(vi) Seg BW ≅ Seg ZX

(There may be many correct answers for each of the above questions.)

Practice Set 7 : ⊙ ∠AOB ≅ ∠BOC

∠AOB ≅ ∠RST ∠AOC ≅ ∠PQR

∠DOC ≅ ∠LMN ∠BOC ≅ ∠RST

Practice Set 8 : ⊙(i) 35 (ii) −54 (iii) −36

(iv) −56 (v) 124 (vi) 84 (vii) 441

(viii) −105

Practice Set 9 : **1.** (i) −6 (ii) $\frac{-7}{2}$ (iii) $\frac{-3}{4}$

(iv) $\frac{-2}{3}$ (v) $\frac{-17}{4}$ (vi) 6 (vii) $\frac{5}{3}$ (viii) $\frac{-1}{6}$

(ix) $\frac{6}{5}$ (x) $\frac{1}{63}$ **2.** 24 ÷ 5, 72 ÷ 15, − 48 ÷ (−10) etc. **3.** −5 ÷ 7, −15 ÷ 21, 20 ÷ (−28) etc.

Practice Set 10 : **1.** 1 **2.** 4,5 and 17,19

3. 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97 Total prime numbers 16

4. 59 and 61, 71 and 73 **5.** (2,3), (5,7), (11,12), (17,19), (29,30) etc. **6.** 2

Practice Set 11 : ⊙(i) 2 × 2 × 2 × 2 × 2

(ii) 3 × 19 (iii) 23 (iv) 2 × 3 × 5 × 5

(v) 2 × 2 × 2 × 3 × 3 × 3

(vi) 2 × 2 × 2 × 2 × 13 (vii) 3 × 3 × 5 × 17

(viii) 2 × 3 × 3 × 19 (ix) 13 × 29 (x) 13 × 43

Practice Set 12 : **1.** (i) 5 (ii) 8 (iii) 5

(iv) 1 (v) 2 (vi) 7 (vii) 3 (viii) 3

(ix) 1 (x) 21

2. (i) HCF 25, Simplest form $\frac{11}{21}$

(ii) HCF 19, Simplest form $\frac{4}{7}$

(iii) HCF 23, Simplest form $\frac{7}{3}$

Practice Set 13 : **1.** (i) 60 (ii) 120 (iii) 288

(iv) 60 (v) 3870 (vi) 90 (vii) 1365 (viii) 180

(ix) 567 (x) 108

2. (i) 1; 1184 (ii) 1; 2346 (iii) 15; 60

(iv) 9; 126 (v) 26; 312

Practice Set 14 : **1.** (i) 30 (ii) 40, 20

2. (i) 14; 28 (ii) 16; 32 (iii) 17; 510

(iv) 23; 69 (v) 7; 588

3. (i) 252 (ii) 150 (iii) 1008 (iv) 60 (v)240

4. 365 **5.** (i) $\frac{12}{11}$ (ii) $\frac{17}{19}$ (iii) $\frac{23}{29}$ **6.** 144

7. 255 **8.** 14m **9.** 18 and 20

Practice Set 15 : **1.** Points in the interior : R, C, N, X

Points in the exterior : T, U, Q, V, Y

Points on the arms of the angles : A, W, G, B

2. ∠ANB and ∠BNC, ∠BNC and ∠ANC, ∠ANC and ∠ANB, ∠PQR and ∠PQT

3. (i) The pairs are adjacent. (ii) and (iii) are not adjacent because the interiors are not separate. (iv) The pairs are adjacent.

Practice Set 16 : **1.** (i) 50°(ii) 27° (iii) 45°

(iv) 35° (v) 70° (vi) 0° (vii) $(90\text{-}x)°$

2. 20° and 70°

Practice Set 17 : **1.** (i) 165° (ii) 95° (iii) 60° (iv) 143 ° (v) 72° (vi) 180° (vii) $(180-a)°$ **2.** Pairs of complementary angles : (i) $\angle B$ and $\angle N$ (ii) $\angle D$ and $\angle F$ (iii) $\angle Y$ and $\angle E$ Pairs of supplementary angles : (i) $\angle B$ and $\angle G$ (ii) $\angle N$ and $\angle J$. **3.** $\angle X$ and $\angle Z$ are complementary angles. **4.** 65° and 25° **5.** (i) $\angle P$ and $\angle M$ (ii) $\angle T$ and $\angle N$ (iii) $\angle P$ and $\angle T$ (iv) $\angle M$ and $\angle N$(v) $\angle P$ and $\angle N$ (vi) $\angle M$ and $\angle T$ **6.** 160° **7.** $m\angle A = (160-x)°$

Practice Set 18 : **1.** Ray PL and Ray PM; Ray PN and Ray PT. **2.** No. Because the rays do not form a straight line.

Practice Set 19 : ---

Practice Set 20 : **1.** $m\angle APB = 133°$, $m\angle BPC = 47°$, $m\angle CPD = 133°$,

2. $m\angle PMS = (180-x)°$, $m\angle SMQ = x°$, $m\angle QMR = (180-x)°$,

Practice Set 21 : **1.** $m\angle A = m\angle B = 70°$

2. 40°, 60°, 80° **3.** $m\angle ACB = 34°$, $m\angle ACD = 146°$, $m\angle A = m\angle B = 73°$

Practice Set 22 : **1.** (i) $\frac{71}{252}$ (ii) $\frac{67}{15}$ (iii) $\frac{430}{323}$ (iv) $\frac{255}{77}$ **2.** (i) $\frac{16}{77}$ (ii) $\frac{14}{45}$ (iii) $\frac{-13}{6}$ (iv) $\frac{7}{6}$ **3.** (i) $\frac{6}{55}$ (ii) $\frac{16}{25}$ (iii) $-\frac{2}{3}$ (iv) 0

4. (i) $\frac{5}{2}$ (ii) $-\frac{8}{3}$ (iii) $-\frac{39}{17}$ (iv) $\frac{1}{7}$ (v) $-\frac{3}{22}$

5. (i) $\frac{4}{3}$ (ii) $\frac{100}{121}$ (iii) $\frac{7}{4}$ (iv) $-\frac{1}{6}$ (v) $\frac{2}{5}$ (vi) $-\frac{10}{7}$ (vii) $-\frac{9}{88}$ (viii) $\frac{25}{2}$

Practice Set 23 : ⊙(i) $\frac{3}{7}, \frac{4}{7}, \frac{5}{7}$ (ii) $\frac{23}{30}, \frac{22}{30}, \frac{21}{30}$ (iii) $-\frac{9}{15}, -\frac{7}{15}, \frac{4}{15}$ (iv) $\frac{6}{9}, 0, -\frac{4}{9}$ (v) $-\frac{2}{4}, -\frac{1}{4}, \frac{3}{4}$ (vi) $\frac{17}{24}, \frac{11}{24}, \frac{-13}{24}$ (vii) $\frac{6}{7}, \frac{8}{7}, \frac{9}{7}$ (viii) $-\frac{1}{8}, -\frac{2}{8}, -\frac{5}{8}$ etc.

Practice Set 24 : ⊙**1.** 3.25 **2.** −0.875 **3.** 7.6 **4.** $0.41\dot{6}$ **5.** $3.\overline{142857}$ **6.** $1.\dot{3}$ **7.** $0.\dot{7}$

Practice Set 25 : **1.** 149 **2.** 0 **3.** 4 **4.** 60 **5.** $\frac{17}{20}$

Practice Set 26 : **1.** -- **2.** (i) 1024 (ii) 125 (iii) 2401 (iv) −216 (v) 729 (vi) 8 (vii) $\frac{64}{125}$ (viii) $\frac{1}{16}$

Practice Set 27 : ⊙(i) 7^6 (ii) $(-11)^7$ (iii) $\left(\frac{6}{7}\right)^8$ (iv) $\left(-\frac{3}{2}\right)^8$ (v) $(a)^{23}$ (vi) $\left(\frac{p}{5}\right)^{10}$

Practice Set 28 : **1.** (i) a^2 (ii) m^{-3} (iii) p^{-10} (iv) 1 **2.** (i) 1 (ii) 49 (iii) $\frac{4}{5}$ (iv) 16

Practice Set 29 : **1.** (i) $\left(\frac{15}{12}\right)^{12}$ (ii) 3^{-8} (iii) $\left(\frac{1}{7}\right)^{-12}$ (iv) $\left(\frac{2}{5}\right)^6$ (v) 6^{20} (vi) $\left(\frac{6}{7}\right)^{10}$ (vii) $\left(\frac{2}{3}\right)^{-20}$ (viii) $\left(\frac{5}{8}\right)^{-6}$ (ix) $\left(\frac{3}{4}\right)^6$ (x) $\left(\frac{2}{5}\right)^{-6}$

2. (i) $\left(\frac{7}{2}\right)^2$ (ii) $\left(\frac{3}{11}\right)^5$ (iii) $\left(\frac{6}{1}\right)^3$ or 6^3 (iv) $\frac{1}{y^4}$

Practice Set 30 : **1.** (i) 25 (ii) 35 (iii) 17 (iv) 64 (v) 33

Practice Set 31 : ---

Practice Set 32 : ⊙Monomials = 7 x ; a ; 4
Binomials = 5y − 7 z ; 5m − 3
Trinomials = $3x^3 - 5x^2 - 11$; $3y^2 - 7y + 5$
Polynomials = $1 - 8a - 7a^2 - 7a^3$

Practice Set 33 : ⊙ (i) $22p + 18q$

(ii) $18a + 24b + 21c$ (iii) $19x^2 - 20y^2$
(iv) $-11a^2b^2 + 44c$ (v) $3y^2 - 8y + 9$
(vi) $4y^2 + 10y - 8$

Practice Set 34 : ⊙(i) $xy + 7z$
(ii) $4x + 2y + 4z$ (iii) $-12x^2 + 16xy + 20y^2$
(iv) $-10x^2 + 24xy + 16y^2$
(v) $-12x + 30z - 19y$

Practice Set 35 : **1.** (i) $288x^2y^2$ (ii) $92xy^3z^2$
(iii) $48ac + 68bc$ (iv) $36x^2 + 73xy + 35y^2$
2. $(40x^2 + 49x + 15)$ sqcm

Practice Set 36 : **1.** $-2(7x + 12y)$

2. $-345x^5y^4z^3$ **3.** (i) 1 (ii) $\frac{5}{2}$ (iii) 1 (iv) 3
(v) -5 (vi) $\frac{69}{5}$ **4.** 16 years, 11 years **5.** 130
6. 30 Notes **7.** 132, 66

Miscellaneous Problems : Set 1 : 1. (i) 80
(ii) -6 (iii) -48 (iv) 25 (v) 8 (vi) -100
2. (i) 15; 675 (ii) 38; 228 (iii) 17; 1683
(iv) 8; 96 **3.** (i) $\frac{14}{17}$ (ii) $\frac{13}{11}$ (iii) $\frac{3}{4}$
4. (i) 28 (ii) 15 (iii) 36 (iv) 45
(v) 16 **5.** -- **6.** (i) 77 (ii) 25 (iii) $\frac{49}{24}$
(iv) 1026 **7.** (i) $\frac{41}{48}$ (ii) $\frac{23}{20}$ (iii) -8
(iv) $\frac{63}{20}$ **8.** -- **9.** -- **10.** -- **11.** -- **12.** --
13. (i) 55° (ii) $(90 - a)°$ (iii) 68°
(iv) $(50 + x)°$ **14.** (i) 69° (ii) 133° (iii) 0°
(iv) $(90 + x)°$ **15.** -- **16.** (i) 110° (ii) 55°
(iii) 55° **17.** (i) 5^7 (ii) $\left(\frac{3}{2}\right)^3$ (iii) $\left(\frac{7}{2}\right)^2$
(iv) $\left(\frac{4}{5}\right)^3$ **18.** (i) 1 (ii) $\frac{1}{1000}$ (iii) 64
(iv) 16 **19.** (i) $8a + 10b - 13c$
(ii) $21x^2 - 10xy - 16y^2$ (iii) $18m - n$
(iv) $2m - 19n + 11p$ **20.** (i) $x = -10$
(ii) $y = 5$

Multiple choice questions : 1. Incentre
2. $\left(\frac{7}{3}\right)^{12}$ **3.** 3 **4.** $\frac{3}{2}$ **5.** $10 \times 3 + (5 + 2)$

Practice Set 37 : **1.** ₹ 240 **2.** 32 bunches of feed **3.** 18 Kg **4.** ₹ 24000 **5.** ₹ 104000

Practice Set 38 : **1.** 10 days; 4 days
2. 50 pages **3.** 2 hours; 3 hours **4.** 20 days

Practice Set 39 : **1.** ₹ 12800; ₹ 16000
2. ₹ 10000; ₹ 24000 **3.** ₹ 38000; ₹ 9120
4. ₹ 147; ₹ 343 **5.** ₹ 54000; ₹ 15120

Practice Set 40 : **1.** ₹ 1770
2. ₹ 25000; ₹ 375000 **3.** ₹ 14875 **4.** ₹ 3600
5. ₹ 180000

Practice Set 41 : **1.** 10% **2.** ₹ 300 **3.** 5 years
4. ₹ 41000 **5.** (i) ₹ 882, ₹ 5082
(ii) ₹ 5000, ₹ 6200 (iii) 2 years, ₹ 8800
(iv) ₹ 12000, 10 years (v) ₹ 19200, ₹ 21600

Practice Set 42 : **1.** (i) 14 cm; 44 cm
(ii) 14 cm; 88 cm (iii) 98 cm; 196 cm
(iv) 11.55 cm; 23.1 cm **2.** 28 cm
3. ₹ 56320 **4.** 250 rotations

Practice Set 43 : **1.** 240°
2. Names of minor arcs - arc PXQ, arc PR, arc RY, arc XP, arc XQ, arc QY
Names of major arcs - arc PYQ, arc PQR, arc RQY, arc XQP, arc QRX
Names of semicircular arcs - arc QPR, arc QYR **3.** 250°

Practice Set 44 : **1.** 2 times **2.** 3 times
3. 90 m **4.** 8 m

Practice Set 45 : **1.** 144 sqcm **2.** 75 sqcm **3.** 46 cm **4.** 9 times

Practice Set 46 : **1.** 1170 sqcm **2.** 8.64 sqcm **3.** ₹ 2302750 **4.** 800 tiles; 3200 tiles **5.** 156 m; 845 sqm

Practice Set 47 : **1.** (i) 54 sqcm (ii) 150 sqcm (iii) 311.04 sqm (iv) 277.44 sqm (v) 181.5 sqm **2.** (i) 460 sqcm (ii) 58.8 sqcm (iii) 31.6 sqm (iv) 171 sqcm **3.** 39.5 sqcm **4.** 6.5 sqm, ₹ 1950

Practice Set 48 : **1.** (i) 25 units (ii) 40 units (iii) 15 units **2.** 26 cm **3.** 16 cm **4.** 12 m

Practice Set 49 : **1.** (i) Yes. (ii) No. (iii) No. (iv) No. (v) Yes. (vi) No.
2. (i) Yes. (ii) No. (iii) Yes. (iv) No. (v) No.

Practice Set 50 : **1.** (i) $25a^2+60ab+36b^2$
(ii) $\frac{a^2}{4}+\frac{ab}{3}+\frac{b^2}{9}$ (iii) $4p^2-12pq+9q^2$
(iv) $x^2-4+\frac{4}{x^2}$ (v) $a^2x^2+2abxy+b^2y^2$
(vi) $49m^2-56m+16$ (vii) $x^2+x+\frac{1}{4}$
(viii) $a^2-2+\frac{1}{a^2}$ **2.** $64-\frac{16}{x}+\frac{1}{x^2}$
3. $(mn+7pq)^2$ **4.** (i) 994009 (ii) 10404 (iii) 9409 (iv) 1010025

Practice Set 51 : **1.** (i) x^2-y^2 (ii) $9x^2-25$
(iii) a^2-36 (iv) $\frac{x}{25}^2-36$ **2.** (i) 249996 (ii) 9991 (iii) 2484 (iv) 9996

Practice Set 52 : ⊙(i) $3\times67\times a\times a\times b\times b$
(ii) $13\times7\times x\times y\times t\times t$
(iii) $2\times2\times2\times3\times a\times a\times b\times b$
(iv) $t\times r\times r\times s\times s\times s$

Practice Set 53 : ⊙(i) $(p+q)(p-q)$
(ii) $(2x+5y)(2x-5y)$ (iii) $(y+2)(y-2)$
(iv) $\left(p+\frac{1}{5}\right)\left(p-\frac{1}{5}\right)$ (v) $\left(3x+\frac{1}{4}y\right)\left(3x-\frac{1}{4}y\right)$
(vi) $\left(x+\frac{1}{x}\right)\left(x-\frac{1}{x}\right)$ (vii) $ab(a-1)$
(viii) $2x^2(2xy-3x)$ (ix) $\frac{1}{2}(y+4z)(y-4z)$
(x) $2(x+2y)(x-2y)$

Practice Set 54 : **1.** 12.29 mm **2.** ₹ 892 **3.** 626.6 mm **4.** 49.4 kg

Practice Set 55 : **1.**

Height	131	132	133	134	135	136	137	138	139	140	Total
Children	3	3	5	3	3	2	2	1	3	5	30

2.

People	1	2	3	4	5	Total
Families	1	13	16	13	7	50

3.

Score	1	2	3	4	5	6	Total
Frequency	2	8	13	8	5	4	40

4.

Chapatis	2	3	4	5	Total
Children	9	10	8	3	30

Miscellaneous Problems : Set 2 : 1. 4 years **2.** 5 days **3.** ₹ 12000; ₹ 18000 **4.** 17.6 cm
5. (i) $4a^2-12ab+9b^2$ (ii) $100+20y+y^2$
(iii) $\frac{p^2}{9}+\frac{pq}{6}+\frac{q^2}{16}$ (iv) $y^2-6+\frac{9}{y^2}$
6. (i) x^2-25 (ii) $4a^2-169$ (iii) $16z^2-25y^2$ (iv) $4t^2-25$ **7.** 3.3 km
8. 25 m; 130 m; ₹ 94500 **9.** 29 Units; 70 Units **10.** 384 cm^2 **11.** $73y^2z^3(5y^2-2z)$

Multiple choice questions : 1. 36 **2.** 1120 **3.** ₹ 1600, ₹ 1000.