

Answers



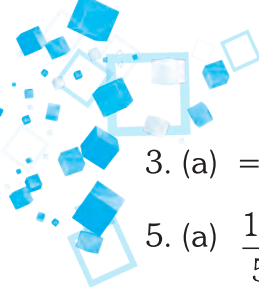
Exercise - 1

1. (a) Rational number (b) Proper fraction (c) Improper fractions (d) Mixed numbers
 (e) Integers (f) Positive (g) Negative
2. (b), (c), and (e)
3. $\frac{0}{9}, \frac{-9}{-11}, \frac{+2}{+5}, \frac{1}{3}, \frac{-6}{-6}, \frac{2}{2}, \frac{3}{9}$ 4. (a) $\frac{9}{-19} \times \frac{-1}{-1} = \frac{-9}{19}$ (b) $\frac{3}{7}$ (c)
 (d) $\frac{0}{-3} \times \frac{-1}{-1} = \frac{0}{3}$ (e) $\frac{11}{23}$
5. $\frac{6}{18} = \frac{12}{36} = \frac{1}{3}$ 6. $\frac{4}{10}, \frac{6}{15}, \frac{10}{25}$
7. $\frac{35}{49}$ 8. $\frac{3}{5}$ and $\frac{3}{5}$ 9. (a) $<$ (b) $<$ (c) $<$ (d) $<$ 10. $\frac{5}{-6} < \frac{-4}{5} < \frac{-2}{3} < \frac{-1}{2}$ 11. $\frac{9}{-15} > \frac{-2}{3} > \frac{-4}{5}$
12. (a) $\frac{41}{15}$ (b) $\frac{-25}{72}$ 13. $\frac{6}{5}$ 14. (a) $\frac{-3}{7}$ (b) $\frac{11}{19}$ (c) $\frac{2}{15}$
15. (a) $\frac{3}{2}$ (b) 7 (c) $\frac{11}{-5}$ 16. (c) and (d) 17. 15,374,512
18. (a), (b), (d) 19. (b), (c), (d) 20. $\frac{48}{80}$ and $\frac{60}{80}$ or between $\frac{3}{5}$ and $\frac{3}{4}$ 21. (a) 15 (b) 0 (c) -1
22. 21 23. 0°C 24. (a) 48 (b) 33 (c) 55 (d) 68 25. 1
26. $\frac{-9}{10}, \frac{-8}{10}, \frac{-7}{10}, \frac{-6}{10}, \frac{-5}{10}, \frac{-4}{10}, \frac{-3}{10}, \frac{-2}{10}, \frac{-1}{10}, \frac{0}{10}, \frac{1}{10}, \frac{2}{10}$ 27. 7510000, 7509999, 7509998
28. (a) 12 (b) 10 (c) 5 29. 2 30. 9996
31. 444 32. (59, 61) (71, 73) (89, 91) 33. (c) 34. (a) 36 (b) 18
35. (a) 1 (b) 1 (c) 1 (d) 2 36. 60 litres 37. (a) $\frac{8}{13}$ (b) $\frac{11}{17}$ 38. (a) 166320 (b) 360
39. (a) 5940 (b) 540 40. 480 41. 36 42. $\frac{-103}{126}$ 43. (i) $\frac{-2}{11}$ (ii) $\frac{-13}{23}$ (iii) $\frac{117}{199}$ (iv) $\frac{91}{237}$
44. 7m 45. gain 1.71% 46. 200g 47. 7.2 seconds 48. 378 km/hr
49. Do it yourself 50. $P = 1$
51. (a) 3.2×10^{-11} (b) 1.234×10^{-9} (c) 6.3×10^{12} (d) 1.543×10^{13} 52. (a) $(4)^3$ (b) $\left(\frac{4}{3}\right)^2$ (c) $\left(\frac{5}{-2}\right)^3$
53. 10001 54. $2x^3 + 5x^2 + 2x + 1$
55. 12 56. $451\frac{1}{2}$ ₹
57. $\frac{4}{5}$ 58. 36 days
59. (a) 1 (b) 0 (c) 1 and -1 (d) not 60. (a) (iii) (b) (ii) (c) (iii) (d) i (e) (ii)

Exercise - 2.1

1. (a) $\frac{1}{2}$ (b) $\frac{1}{3}$ (c) $\frac{1}{5}$ (d) $\frac{1}{5}$ (e) $\frac{1}{4}$
2. $\frac{4}{18}, \frac{6}{27}, \frac{8}{36}$





3. (a) = (b) < (c) = (d) = (e) > 4. (a) and (c)

5. (a) $\frac{19}{5}$ (b) $\frac{20}{3}$ (c) $\frac{-21}{4}$ (d) $\frac{-23}{3}$ 6. (a) and (b)

7. (a) $\frac{-12}{20}$ (b) $\frac{18}{-30}$ (c) $\frac{-21}{35}$ (d) $\frac{24}{-40}$

8. (a) > (b) < (c) < (d) < (e) < (f) <

9. (a) $\frac{-12}{5}$ (b) $\frac{-7}{10}$ (c) $\frac{7}{-12}$ (d) $\frac{-1}{3}$ (e) $\frac{-5}{8}$ (f) $\frac{-8}{7}$

10. (a) $\frac{-2}{3} < \frac{4}{-9} < \frac{-5}{12} < \frac{7}{-18}$ (b) $\frac{-3}{4} < \frac{-7}{16} < \frac{5}{-12} < \frac{9}{-24}$ (c) $\frac{-11}{15} < \frac{-7}{10} < \frac{-13}{20} < \frac{3}{-5}$ (d) $\frac{-9}{14} < \frac{-4}{7} < \frac{-23}{42} < \frac{13}{-28}$

11. (a) $\frac{1}{3} > -2 > \frac{-13}{6} > \frac{8}{-3}$ (b) $\frac{-3}{10} > \frac{7}{-15} > \frac{-11}{20} > \frac{17}{-30}$ (c) $\frac{-7}{12} > \frac{-13}{18} > \frac{-5}{6} > \frac{23}{-24}$ (d) $\frac{-23}{33} > \frac{-19}{22} > \frac{-39}{44} > \frac{-10}{11}$

12. $\frac{-1}{5}$ and $\frac{+1}{5}$

13. (a) less than (b) $x > z$ (c) standard (d) standard (e) 0 (f) infinite

(g) a (h) 0 (i) reciprocals (j) 1

14. (a) true (b) true (c) false (d) false (e) true (f) true (g) false

15. (a) (ii) (b) (iii) (c) (ii) (d) (iii) (e) (ii) (f) (i)

Exercise - 2.2

1. (a) $\frac{13}{5}$ (b) $\frac{3}{5}$ (c) larger (d) left (e) opposite (f) right 2. Do it yourself

3. Do it yourself

Exercise - 2.3

1. (a) $\frac{2}{5}$ (b) $\frac{-10}{11}$ (c) $\frac{2}{3}$ (d) -2 (e) $\frac{-4}{3}$ 2. (a) $\frac{3}{20}$ (b) $\frac{1}{24}$ (c) $\frac{17}{18}$ (d) $\frac{-1}{48}$ (e) $\frac{-5}{54}$ (f) $\frac{-13}{60}$

3. Do it yourself.

4. (a) $\frac{21}{40}$ (b) $\frac{21}{30}$ (c) $\frac{-15}{11}$ (d) 0 (e) $\frac{8}{29}$ (f) $\frac{17}{9}$ (g) 23 (h) $\frac{-17}{9}$ (i) $\frac{-2}{3}$

5. (a) $\frac{77}{40}$ (b) $\frac{-5}{16}$ (c) $\frac{31}{20}$ (d) $\frac{17}{30}$ (e) $\frac{-11}{18}$ (f) $\frac{2}{5}$

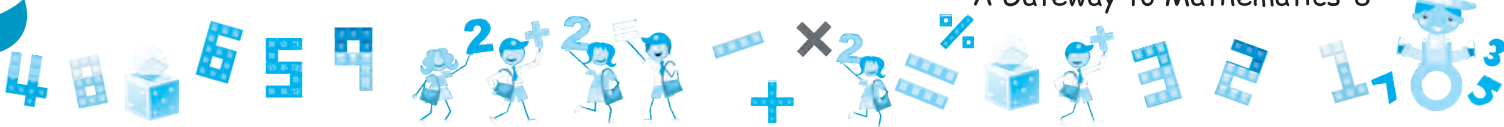
6. (a) $\frac{-14}{15}$ (b) $\frac{-35}{8}$ (c) $\frac{17}{140}$ (d) $\frac{-77}{18}$ 7. $\frac{-1}{2}$ 8. $\frac{12}{7}$

9. (a) $\frac{-3}{17}$ (b) $\frac{-31}{8}$ (c) $\frac{-8}{13}$ (d) $\frac{-9}{11}$ (e) $\frac{-3}{11}$ (f) 0, 0 10. Do it yourself 11. Do it yourself

12. $\frac{59}{60}$ 13. (a) 2 (b) $1\frac{1}{21}$ 14. (a) T (b) F (c) F 15. (a) > (b) > (c) = (d) > (e) =

Exercise - 2.4

1. (a) Commutative law (b) Distributive law (c) Associate law (d) Multiplication law





(e) Multiplicative inverse law (f) Multiplicative property of 0

2. (a) 1 (b) no (c) 1 and -1 (d) no (e) $\frac{1}{a}$ (f) $-\frac{1}{a}$

3. (a) $\frac{1}{8}$ (b) $\frac{5}{6}$ (c) $\frac{-32}{15}$ (d) -28 (e) -14 (f) 26

4. (a) $\frac{-21}{17}$ (b) 28 (c) $\frac{15}{7}$ (d) $\frac{25}{-19}$ 5. Do it yourself 6. (a) $\frac{3}{8}$ (b) $\frac{197}{20}$ (c) $\frac{63}{32}$

7. Do it yourself 8. Closure and multiplication by 1 9. (i) Closure (ii) associativity of multiplication

(iii) multiplicative inverse (iv) multiplication by 1 10. 1 11. 1 and -1 12. $\frac{1}{x}$ 13. $\frac{2}{9}$

Exercise - 2.5

1. (a) $\frac{37}{2}$ (b) 9 (c) $\frac{9}{40}$ (d) $\frac{-5}{3}$ (e) $\frac{-17}{12}$ (f) $\frac{1}{36}$

2. (a) false (b) false (c) false (d) false (e) false (f) false

3. (a) 1 (b) $\frac{4}{15}$ (c) $\frac{-12}{13}$ (d) 1 (e) $\frac{-9}{17}$ (f) $\frac{-11}{25}$ 4. (a) $-9\frac{3}{5}$ (b) $\frac{162}{7}$ (c) $\frac{2}{21}$ (d) $\frac{1}{16}$ (e) $\frac{-32}{75}$ (f) $\frac{-5}{2}$

5. $\frac{1}{2}$ 6. $\frac{5}{3}$ 7. $\frac{9}{4}$ 8. $\frac{-3}{16}$ 9. $\frac{2}{5}$ 10. $\frac{97}{33}$ 11. (a) false (b) false (c) false (d) false

Exercise - 2.6

1. $\frac{-4}{13}, \frac{-3}{13}, \frac{-2}{13}, \frac{-1}{13}, \frac{0}{13}, \frac{1}{13}, \frac{2}{13}, \frac{3}{13}, \frac{4}{13}, \frac{5}{13}$ 2. $\frac{-7}{8}, \frac{-3}{4}, \frac{-5}{8}, \frac{-9}{10}$ 3. -2, -1, 2

4. (a) $\frac{25}{36}$ (b) $\frac{-37}{60}$ (c) $\frac{17}{48}$ (d) $\frac{9}{40}$

Exercise - 2.7

1. $4\frac{1}{10}$ m 2. $26\frac{5}{12}$ kg 3. $\cdot 1636\frac{1}{4}$ 4. $632\frac{2}{5}$ sqm

5. $2\frac{3}{4}$ m 6. 12m 7. $1\frac{111}{155}$ 8. 640 9. 303 km 10. ₹. $56\frac{1}{2}$

11. 49 grapes 12. 21000 13. $\cdot 6400$ 14. $\cdot 125$

Exercise

1. (a) (i) (b) (ii) (c) (iii) (d) (iii) (e) (iv) (f) (ii) (g) (iii) (h) (iv)

2. (a) Additive inverse (b) Closure (c) Additive inverse
(d) Commutative (e) Associative (f) Zero additive identity

3. (a) $\frac{-3}{7}$ (b) $\frac{5}{11}$ (c) $\frac{15}{7}$ (d) $\frac{-7}{3}$ (e) $\frac{-11}{5}$ (f) $\frac{18}{21}$ (g) $\frac{-5}{19}$ (h) $\frac{-18}{23}$

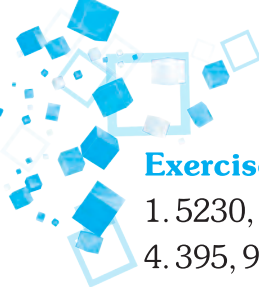
4. (a) $\frac{5}{3}$ (b) $\frac{5}{-3}$ (c) $\frac{1}{-7}$ (d) $\frac{7}{6}$ (e) $\frac{101}{-99}$ (f) $\frac{9}{19}$ (g) $\frac{91}{-1}$ (h) $\frac{-27}{20}$

5. (a) Distributive (b) Associative (c) Distributive (d) Identity of Multiplication
(e) Commutative (f) Multiplication inverse

6. (a) $\frac{-1}{150}$ (b) $\frac{-1}{7}$

7. Do it yourself.





Exercise - 3.1

1. 5230, 698, 986, 4354 2. 726, 915, 84, 42, 105 3. 84, 72, 364, 3536, 6328, 5316
 4. 395, 930, 33390, 80000, 11115, 22220 5. 9000, 558, 498, 294, 414, 138 6. 280, 552, 4200, 5536
 7. 6282, 2520 8. 2330, 3920, 1000, 370 9. (a) 8 (b) 80 (c) 87 10. 261 11. 585, 5

Exercise - 3.2

1. (a) 15 (b) 6 (c) $\frac{7}{11}$ 2. $6^2 = 1 + 2 + 3 + 4 + 5 + 6 + 5 + 4 + 3 + 2 + 1$
 $5^2 = 1 + 2 + 3 + 4 + 5 + 4 + 3 + 2 + 1$
 3. $1111111 = 123456 \times 9 + 6 + 1$ 4. $123 \times 8 + 3 = 987$
 $111111 = 12345 \times 9 + 5 + 1$ $12 \times 8 + 2 = 98$
 $11111 = 1234 \times 9 + 4 + 1$ $1 \times 8 + 1 = 9$
 5. $4321 \times 9 - 1 = 38888$
 $54321 \times 9 - 1 = 488888$
 $654321 \times 9 - 1 = 5888888$

Exercise - 3.3

1. Do it yourself 2. Do it yourself 3. Do it yourself 4. Do it yourself 5. Do it yourself 6. Do it yourself
 7. Do it yourself 8. Do it yourself 9. (a) 7 (b) 3, 4, 6 and 7 (c) 1 (d) 1 and 7 (e) 2, 6, and 7
 (f) 3, 7 (g) 3, 5
 10. (a) ●● (b) ●● (c) ●● (d) ●● (e) ●● (f) ●● (g) ●● (h) ●● (i) ●●

Exercise - 3.4

1. $\frac{16}{64}, \frac{49}{98}$ 3. (a) A=2, B=2, C=4, D=1, E=7, F=8, G=1, H=9, K=6
 (b) K=2, L=9, M=4, N=6, P=9, Q=3, R=6, X=1, Y=3, Z=6, T=6, D=0
 2. (a) A=8 (b) N=5, M=2 or N=6, M=3 (c) Z=5 (d) A=6
 4. Any number whose sum with reversed number is in three digits. 5. Any three digit number.

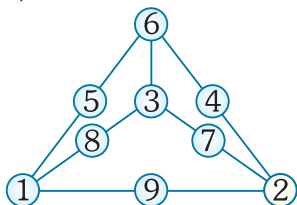
Exercise

1. (a) (i), (iii) (b) (i), (iv) (c) (ii), (iii), (iv) (d) (iii)
 2. (a) 26 (b) 124

3.

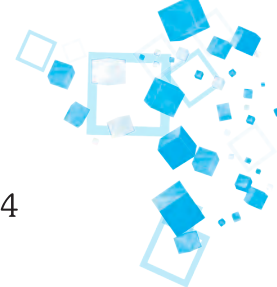
30	10	12	8
8	20	18	14
16	12	10	22
6	18	20	16

4. 10 minutes 5. WLJHU 6. (a) $100 \times 5 + 10 \times 0 + 8$ (b) $100 \times 1 + 10 \times 8 + 7$
 7. (a) 789 (b) 630 8. $81 \div 9 - 4 \times 7 + 19$ 9. Eldest son 12, middle son 8 and youngest son 3
 10. (a) $5^2 + 6^2 + 30^2 = 31^2$ (b) $6^2 + 7^2 + 42^2 = 43^2$
 11.



12. (a) No (b) Yes (c) No
 13. (a) Yes (b) Yes (c) Yes
 14. 525, 585, 555 15. 2, 8





Exercise - 4.1

- (a) base = 2, exponent = 5 (b) base = -5, exponent = 4 (c) base = $\frac{1}{3}$, exponent = 4
- (a) 5^4 (b) $\left(\frac{2}{7}\right)^4$ (c) $\left(\frac{3}{5}\right)^4$ (d) -2^5
- (a) 3^9 (b) -5^9 4. (a) 4 (b) 1 (c) 6
- (a) 3^6 (b) 7^3 (c) -2^7 6. (a) 6 (b) 3 (c) 153
- (a) $-44x^4$ (b) $2^2 \times 3 \times 5^3$ (c) 3^{15} 8. (a) $2^8 \times 3^4$ (b) $2^2 \times 3^2 \times 11^3$ 9. (a) $x = 2$
(b) $x = 16$ (c) $x = 1$

Exercise - 4.2

- (a) $\frac{1}{243}$ (b) $\frac{-16}{729}$ (c) $\frac{-625}{14641}$ (d) $\frac{2401}{256}$
- (a) $\left(\frac{3}{7}\right)^2$ (b) $\left(\frac{3}{4}\right)^5$ (c) $\left(\frac{2}{3}\right)^4$ (d) $\left(\frac{-5}{9}\right)^3$
- (a) 125 (b) $\frac{15}{8}$ (c) $\frac{9}{8}$ (d) $\frac{3}{16}$ (e) 864
(f) 6561 (g) $\frac{-1}{12}$ (h) $\frac{3}{625}$
- (a) $\frac{49}{9}$ (b) $\frac{1024}{243}$ (c) $\frac{81}{16}$ (d) $\frac{729}{-125}$ (e) 243
(f) $\frac{256}{2401}$ (g) $\frac{14641}{625}$ (h) $\frac{729}{16}$
- (a) $\frac{625}{81}$ (b) $\frac{121}{169}$ (c) $\frac{32}{16807}$ (d) $\frac{1}{27}$ 6. $\frac{4}{3^2} < \left(\frac{4}{3}\right)^2$ 7. $\frac{10}{16}, \frac{11}{16}, \frac{12}{16}, \dots, \frac{35}{16}$

Exercise - 4.3

- (a) true (b) true (c) false (d) true (e) false
- (a) 5 (b) 7 (c) 18 (d) 3 (e) 4 (f) 9 (g) 5

Exercise - 4.4

- (a) $\left(\frac{25}{4}\right)^2$ (b) $\left(\frac{-5}{3}\right)^8$ (c) $\left(\frac{-5}{8}\right)^{11}$ (d) $\left(\frac{7}{5}\right)^{13}$ (e) $\left(\frac{9}{11}\right)^8$ (f) $\left(\frac{-11}{7}\right)^{24}$
- (a) $\left(\frac{-125}{64}\right)^2$ (b) 256 (c) $\frac{100}{81}$ (d) $\frac{16}{3}$ (e) 40 (f) $\frac{16}{9}$
(g) -9 (h) $\frac{16}{9}$ 3. (a) $\left(\frac{3}{7}\right)^{22}$ (b) $\frac{-11}{5}$ 4. $\frac{-8}{3}$ 5. $\frac{-2}{3}$
- (a) 2 (b) 2 7. $\frac{1}{64}$ 8. Do it yourself 9. (a) -6 (b) +1

Exercise - 4.5

- (a) 1.9×10^8 (b) 12.3×10^9 (c) 3.7×10^{-15} (d) 6.6×10^{-9}
- (a) 95000000 (b) 9800000000 (c) 65146939 (d) 38000000000 (e) 1001000000
(f) 650000 3. (a) 7.1865×10^{10} (b) 71.865×10^9 (c) 7186.5×10^7 (d) 71865×10^6
(e) 718.65×10^8 4. (a) 398.4×10^{-7} (b) 39.84×10^{-6} (c) 3.984×10^{-5}
- (a) $3 \times 10^5 \text{ km/sec}$ (b) $2.997925 \times 10^5 \text{ km/sec}$ (c) $8 \times 10^9 \text{ years}$ (d) $6 \times 10^9 \text{ years}$
(e) $1.5 \times 10^8 \text{ km}$ (f) $5.98 \times 10^{24} \text{ kg}$ (g) $1 \times 10^{-10} \text{ m}$ (h) $1.05 \times 10^6 \text{ kg}$
(i) $1.353 \times 10^9 \text{ cubic km}$ (j) 1.3611×10^{10} (k) 10^{-7} m



Exercise - 4.6

- (a) $(34)^{\frac{1}{5}}$ (b) $(27)^{\frac{1}{4}}$ (c) $(25)^{\frac{-2}{11}}$ (d) $\left(\frac{10}{7}\right)^{\frac{1}{7}}$
- (a) $\sqrt[8]{21}$ (b) $\sqrt[4]{27^3}$ (c) $\sqrt[5]{335^7}$ (d) $\sqrt[9]{\frac{6}{19}}$
- (a) $\frac{1}{x^4}$ (b) $\frac{1}{x^{\frac{1}{2}}}$ (c) $\frac{1}{x^{\frac{3}{4}}}$ (d) $\frac{2}{5x^{\frac{7}{8}}}$
- (a) x^2 (b) x (c) x^2 (d) 1
- (a) 4 (b) $\frac{1}{9}$ (c) 8 (d) $\frac{2}{3}$
- (a) $\frac{1}{-2}$ (b) 10^4 7. $(3)^{\frac{1}{2}}$ 8. 5
- $x = \frac{17}{4}, y = \frac{-1}{4}$ 10. (a) 5 (b) 13 (c) 7 (d) 0.008

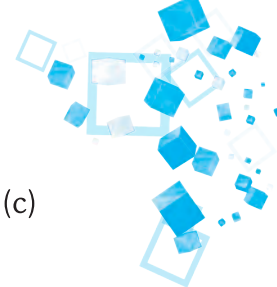
Exercise - 4.7

- (a) $(5)^{\frac{1}{2}}$ (b) $(7)^{\frac{1}{3}}$ (c) $\left(\frac{3}{4}\right)^{\frac{1}{4}}$ (d) $\left(\frac{71}{2159}\right)^{\frac{1}{8}}$
- (a) $\sqrt{16}, 16, 2$ (b) $\sqrt[3]{125}, 125, 3$ (c) $\sqrt[19]{\frac{6}{17}}, \frac{6}{17}, 19$
- (a) $3\sqrt{2}$ (b) $9\sqrt{5}$ (c) $6\sqrt{3}$ (d) $10\sqrt{3}$
- (a) $\sqrt{24}$ (b) $\sqrt{245}$ (c) $\sqrt{80}$ (d) $\sqrt{\frac{27}{8}}$ (e) $\sqrt{1300}$
- (a) $5\sqrt{5}$ (b) $4\sqrt{7}$ (c) $3\sqrt{2}$ (d) $5\sqrt{3}$
- (a) $3\sqrt{2}$ (b) $2\sqrt{2}$ (c) $8\sqrt{3}$ (d) 73
- (a) $\sqrt{10}$ (b) 14

Exercise

- (a) (iii) (b) (iv) (c) (i) (d) (iv) (e) (iii)
(f) (iv) (g) (ii) (h) (i)
- (a) base = $-\frac{1}{9}$ exponent = 8 (b) base = -18 exponent = 3
(c) base = 12 exponent = -15 (d) base = $\frac{3}{19}$ exponent = -3
(e) base = 2 exponent = -42 (f) base = $\frac{1}{3}$ exponent = 6
(g) base = 6 exponent = 2 (h) base = 2 exponent = 1
- (a) 6^8 (b) $\left(\frac{2}{5}\right)^{-2}$ (c) $(ab)^4$ (d) $\left(\frac{-3}{8}\right)^{-2}$ (e) $\left(\frac{1}{9}\right)^7$
- (a) 3 (b) 4 (c) 4 (d) 5
- (a) $\frac{4 \times b \times 5^a}{9^3}$ (b) 4 (c) 1 (d) $\left(\frac{-1}{3}\right)^9$
- (a) $\left(\frac{3}{4}\right)$ (b) -2
- 0
- (a) $(a \times b)^2$ (b) $\left(\frac{2}{9}\right)^3$ (c) 7^8 (d) $(10)^{10}$





Formative Assessment-I

- A. 1. (a) 2. (a) 3. (c) 4. (c) 5. (a) 6. (c) 7. (a) 8. (c)
 9. (a) 10. (d)
- B. integers 2. square 3. infinite 4. zero at ones place 5. $\frac{b}{a}$
 6. negative integers 7. a 8. pure radical 9. power notation 10. 4^8
- C. 1. T 2. F 3. F 4. T 5. T 6. F 7. T
 8. T 9. T 10. T

Exercise - 5.1

1. (a) true (b) false (c) true (d) true (e) true (f) false (g) false
 2. (a) Numbers ending in 2,3,7 and 8 are never perfect squares. So, they are not perfect squares.
 3. (a) 4 (b) 0 (c) 9 (d) 6 (e) 4
 (f) 1 (g) 9 (h) 0 (i) 9
 4. The numbers end with 7, 8 and 3. So, they are not perfect square. 5. 3332,53904, 30 6. (a) (b) and (c)
 7. (a) 25 (b) 64 (c) 100 (d) 144
 8. (a) $1+3+5+7+9+11+13$ (b) $1+3+5+7+9+11+13+15+17$
 (c) $1+3+5+7+9+11$ (d) $1+3+5+7+9+11+13+15+17+19+21$
 9. (a) 3, 4, 5 (b) 5, 12, 13 (c) 7, 24, 25 (d) 8, 15, 17
 10. (a) 8, 15 (b) 12, 35 (c) 18, 80 11. (iv) 3 and 5 (v) 3, 5, 7, 9, 11 and 13

Exercise - 5.2

1. (a), (c) and (d) 2. (a) 5 (b) 6 (c) 2 3. 16, 36, 64, 81, 121
 4. 225, 441, 2916, 11025 5. 81 6. (a) 21 (b) 42 (c) 64 (d) 91
 7. (b) and (d) 8. Do it yourself 9. 11, 13 10. (a) 1, or 9 odd (b) 4 or 6
 (c) 1 or 9 odd 11. (a) 88 (b) 98 (c) 77 (d) 84

Exercise - 5.3

1. (a) No (b) Yes (c) Yes (d) No 2. (a) 84 (b) 90 (c) 96
 (d) 105 (e) 15 3. (a) Perfect square, 126 (b) Perfect square, 132
 4. 7 5. 6 6. 35 7. 3600 8. 900

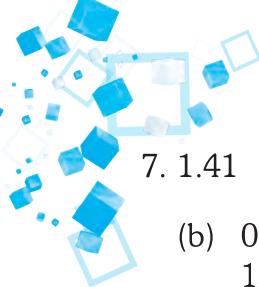
Exercise - 5.4

1. 440 2. 345 3. 625 4. 316 5. 222 6. 304 7. 140
 8. 134 9. 102 10. 107 11. 119 12. 79 13. 75 14. 129
 15. 25 16. 16 17. 56 18. 64, 92 19. 9801 20. Rs. 30,000

Exercise - 5.5

1. (a) $\frac{25}{27}$ (b) $\frac{11}{16}$ (c) $\frac{8}{15}$ (d) $\frac{4}{9}$
 2. (a) $\frac{46}{123}$ (b) $\frac{19}{25}$ (c) $\frac{333}{555}$ (d) $\frac{129}{67}$
 3. (a) $\frac{4}{9}$ (b) $1\frac{13}{17}$ (c) $2\frac{1}{18}$ (d) $1\frac{5}{6}$ (e) $4\frac{23}{27}$ (f) $7\frac{18}{35}$
 4. (a) 126 (b) $\frac{13}{17}$ 5. (a) 0.13 (b) 0.32 (c) 4.81 (d) 1.30
 (e) 9.21 (f) 3.05 (g) 4.1 (h) 2.7 6. (a) 0.54 (b) 1.04
 (c) 3.17 (d) 3.14 (e) 8.7





7. 1.41
 (b) 0.902
 14. (a) $\frac{15}{7}$
 17. 30.411
8. 6.8m
 (c) 0.092
 (b) $\frac{222}{11}$
 18. 100
9. $\frac{9}{11}$
 (d) 0.24
 (a) $\frac{1.73}{2.82}$
10. $1\frac{2}{13}$
 (e) 0.0013
 (b) $\frac{2.99}{2.64}$ or $\frac{3}{2.64}$
11. 0.89
 13. $\frac{15093}{1000}$ or 15.09
 (c) 0.228
12. (a) 9.21
 16. $\frac{231}{10000}$

Exercise

1. (a) (iv) (b) (i) (c) (ii) (d) (i) (e) (ii) (f) (i) (g) (i)
 2. (a) 2 (b) 4 (c) 5 (d) 7
 3. (a) 9 or 1 (b) 6 or 4 (c) 9 or 1 (d) 5
 4. (a) 361 (b) 2809 (c) 5184 (d) 7921
 5. (a) 289 (b) 21025 (c) 83521 (d) 459684
 6. (a) 6 (b) 7 (c) 10 (d) 15
 7. (a) 18 (b) 25 (c) 77 (d) 136
 8. (a) 16 (b) 38 (c) 72 (d) 300

Exercise - 6.1

1. (a) 343 (b) 9261 (c) 64000 (d) 1000000
 2. (a) 1,27,125,343,729 (b) 8,64,216,512,1000 3. (a), (c), (d)
 4. $512m^3$ 5. (c)
 6. (a) $\frac{64}{729}$ (b) $\frac{-2197}{512}$ (c) 0.000000001 (d) -24.389
 7. Do it yourself 8. 4 9. 512, 1000, 13824 10. 125, 343, 6859
 11. $2744m^3$
 12. (a) T (b) T (c) T (d) F (e) F (f) F
 (g) T (h) F
 13. (a) 17 (b) 12 (c) 26 (d) 33 (e) 105 14. 60,60
 15. $210m$ 16. (a) -5 (b) -20 (c) -15 (d) -91
 17. (a) $\frac{-5}{9}$ (b) $\frac{4}{11}$ (c) $\frac{22}{23}$ (d) $\frac{21}{35}$ 18. (a) 10 (b) -72
 (c) 225 19. (a) 24 (b) 24 (c) 30 20. 2.4m 21. Do it yourself
 22. (a) 73 (b) 48 (c) 36
 23. $\frac{29}{6}m$ 24. (a) 1 (b) 4 (c) 3 25. 121,9

Exercise - 6.2

1. (a) 1331 (b) 9261 (c) 3375 (d) 1000000 (e) $\frac{125}{8}$ (f) $\frac{343}{8}$
 (g) $\frac{64}{125}$ (h) $\frac{216}{125}$
 2. (a) $\frac{125}{27}$ (b) $\frac{2197}{1000}$ (c) $\frac{1}{3375}$
 3. (a), (c), (d), (f), (h) 4. (a), (c), (f) 5. 14 6. $2\left(\frac{5}{8}\right)^3$ 7. 25
 8. 13 9. 7 10. (a) $\left(\frac{6}{13}\right)^3$ (b) $\left(\frac{5}{8}\right)^3$ (c) 20^3
 11. Do it yourself



Exercise - 6.3

1. (a) 15 (b) 16 (c) 21 (d) 36 (e) 45
 (f) 73 (g) 82 (h) 81
2. (a) $\frac{5}{6}$ (b) $\frac{-3}{5}$ (c) $\frac{-4}{7}$ (d) $\frac{9}{13}$ (e) $\frac{7}{55}$
 (f) $\frac{15}{17}$
3. (a) $\frac{9}{10}$ (b) $\frac{-15}{30} = \frac{-1}{2}$ 4. 15,45 5. 13 6. 25

Exercise - 6.4

1. Do it Yourself 2. 14 3. 8
 4. (a) 1 (b) 2 (c) 3 (d) 4 (e) 5 (f) 6
 5. (a) False (b) False (c) True (d) False (e) True

Exercise

1. (a) (iii) (b) (ii) (c) (i) (d) (i) (e) (iii)
 2. (a) . 3. (a) 6 (b) 7 (c) 11 (d) 14
 4. (a) 16 (b) 19 (c) 35 (d) 47
 5. (a) 14 (b) 18 (c) 35 (d) 42 6. 5

Exercise - 7.1

1. (a) like (b) like (c) unlike (d) like (e) unlike
 (f) unlike (g) like
2. (a) xy and $5yx$ (b) $7b$ and $5b$ (c) $3a$ and $2a$ (d) $8x$ and $3x$
 (e) a^2 and $3a^2$ (f) a^2z and $4a^2z$ (g) $9x, x$ and $6x$
3. (a) $(a-7)$ (b) $(3+5a)$ (c) $(a+11)x7$ (d) $(6a-2)$ (e) $7x(8-a)$
4. (a) 0 (b) 1 (c) 5 (d) 9 (e) 4
5. (a) Binomial (b) Binomial (c) Monomial (d) Trinomial (e) Trinomial (f) Monomial
6. (a) $5x-8z$ (b) $-2a^2-3b^2+2$ (c) $7x^2-4x-1$ (d) $-x^2+9$ (e) $-2mn+1$
7. (a) $3a+3b-3$ (b) $7m^2-n+8$ (c) $12p-9q+r-7s$
 (d) $3x^2-9y^2+2xy-16$ (e) $p^2q-7pq^2+8pq-18q+5p+28$
8. $(3m+5n)$ units 9. $5x^2+3y^2-7xy+6-x$

Exercise - 7.2

1. (a) $-10a^3b^3$ (b) $24x^4y^3$ (c) $8x^4y^3$ (d) $-21x^4y^4$
2. (a) $24x^4y^4$ (b) $84pqr$ (c) $24x^3y^2z$ (d) a^6
3. (a) 0 (ii) 21 4. $10xy$ 5. $16a^4$ 6. (a) x^2+2x (b) $-a^2b+5ab^2$
7. (a) $8a^{50}$ (b) $\frac{-3}{5}x^3y^3$ (c) $-4p^4q^4$ (d) x^{10}
8. (a) a^3+b^3 (b) $2x^4+9x^3-47x^2+68x-32$ (c) $6a^4+11a^2b^2+3b^4$
 (d) $8m^5-24m^4+12m^3+15m^2-17m+21$

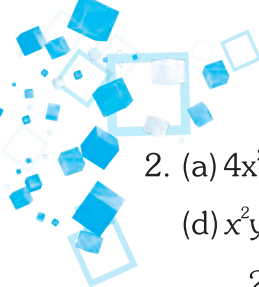
Exercise - 7.3

1. (a) $9xy^2$ (b) $-8bc^2$ (c) $8ab$ (d) $-2z$
2. (a) x^3-3x+9 (b) $-3x+4-5y$ (c) $3ab-4b+5ab^2$ (d) $-3a^2-2a+1$
3. (a) $Q = 2x+1, R = 0$ (b) $Q = 5a+1, R = 0$ (c) $Q = x^3-x^2+3x-5, R = 0$ (d) $Q = 3m-8, R = 7$

Exercise - 7.4

1. (a) $x^2+16x+64$ (b) $x^2+22x+121$ (c) $16x^2+56xy+49y^2$
 (d) $x^2-24x+144$ (e) $9x^2-30xy+25y^2$ (f) $9a^2-3a+\frac{1}{4}$





2. (a) $4x^2 + 12xy + 9y^2$ (b) $16p^2 - 24pq + 9q^2$ (c) $36x^4 - 60x^2y + 25y^2$
 (d) $x^2y^2 + 6xyz + 9z^2$ (e) $0 \cdot 16p^2 - 0 \cdot 4pq + 0 \cdot 25q^2$ (f) $4x^2y^2 - 20xy^2 + 25y^2$

3. (a) $\frac{25}{9}x^2 - \frac{9}{25}y^2$ (b) $9x^2 - 49y^2$ (c) $0 \cdot 64x^2 - 0 \cdot 09y^2$ (d) 966000 (e) 84

4. (a) $40 \cdot 32$ (b) 42640 (c) 3016 (d) $11 \cdot 84$

6. (a) 800 (b) $0 \cdot 02$

Exercise

1. (a) (ii) (b) (i) (c) (iii) (d) (i) (e) (i) (f) (i)

2. $-31x^2 + 4a^2 + 3b^2 - 3xy + 1$

3. $2a^2 + 3a + 5$

4. $6x^2 + 15x - 22$

5. $-(3xy^2 + 8y^2 + 5y + 6xy + 6)$

6. $ab^2 + b^2 - 34ab - 6b + 2$

7. 3

8. $-(11x + 2)$ 9. $6 - 2xy + 2x^2 - 5y^2$

10. $2x^2 - 3x + 2$

Exercise - 8.1

1. $7a^2(2a + 3a^2b - 4b^2)$

2. $-5(1 + 2p - 4p^2)$

3. $3a(3a^2 - 2a + 4)$

4. $4x(2x - 18y + 3)$

5. $9a^2b^2(2ab - 3b + 4a)$

6. $12a^2(2a - 3b)$

7. $5a^2(2a - 3)$

8. $12a^2b(3a - 5b^2c)$

9. $8m(2m - 3n)$

10. $5xy(3y - 4x)$

11. $3a^2b^2(4a - 7a)$

12. $3(4a + 5)$

13. $7(2a - 3)$

14. $3a(3 - 4a)$

Exercise - 8.2

1. $(a - 2b)^2$

2. $(xy - 3z)^2$

3. $(1 - 3a)^2$

4. $(1 - x)^2$

5. $(4a - 3)^2$

6. $(3a - 2)^2$

7. $(a - 5)^2$

8. $(a - 3)^2$

9. $(a + \frac{1}{2})^2$

10. $(3a + 4)^2$

11. $(6a + 3)^2$

12. $(12m + 5)^2$

13. $(a + 3b)^2$

14. $(3 + x)^2$

15. $(1 + x)^2$

16. 2.5

17. 0.6

18. 2

19. 0.74

Exercise

1. (a) (ii) (b) (i) (c) (ii) (d) (iii)

2. (a) $7a^2(2a + 3a^2b - 4b^2)$

(b) $5(4p^2 - 2P - 1)$

(c) $3a(3a^2 - 2a + 4)$

(d) $4x(2x - 18y + 3)$

(e) $9a^2b^2(2ab - 3b + 4a)$

(f) $12a^2(2a - 3b)$

(g) $5a^2(2a - 3)$

(h) $(4a - 3)(4a - 3)$

(i) $(a + 3b)(a + 3b)$

(j) $(3a - 2)(3a - 2)$

(k) $(x + 3)(x + 3)$

(l) $12a^2b(3a - 5b^2c)$

(m) $8m(2m - 3n)$

(n) $5xy(3y - 4x)$

(o) $3a^2b^2(4b - 7a)$

(p) $3(4a + 5)$

(q) $7(2a - 3)$

(r) $3a(3 - 4a)$



Exercise - 9.1

- | | | | | |
|-------------------------|--------------|--------------|----------------------|---------------|
| 1. $x = 7$ | 2. $x = 3$ | 3. $x = 4$ | 4. $x = \frac{3}{2}$ | 5. $x = 4$ |
| 6. $a = \frac{12}{5}$ | 7. $a = 0$ | 8. $b = 4$ | 9. $x = 4$ | 10. $x = -29$ |
| 11. $x = \frac{6}{7}$ | 12. $x = 12$ | 13. $x = -5$ | 14. $x = 108$ | 15. $a = 2$ |
| 16. $x = 4\frac{5}{10}$ | 17. $x = 3$ | 18. $x = 0$ | 19. $x = 14$ | 20. $x = -2$ |

Exercise - 9.2

- | | | | | |
|-------------------------------|-------------------------------|--|-------------------|-------|
| 1. 6 | 2. 44, 55, 66 | 3. 10 | 4. $\frac{25}{3}$ | 5. 15 |
| 6. -8 | 7. $A = `3000, B = `750$ | 8. 200 | 9. 40 | |
| 10. width = 12m, Length = 20m | 11. 17, 19, 21 | 12. Sahil's age = 38 years, his son's age = 14 years | | |
| 13. 45, 60 | 14. Width = 10m, Length = 53m | 15. 76, 78, 60 | 16. 13, 21, 15 | |

Exercise

- | | | | | | |
|---|-------------|---------------------|---------------|-------------|-----------------------|
| 1. (a) (ii) | (b) (i) | (c) (iv) | (d) (ii) | (e) (ii) | |
| 2. (a) $x = 7$ | (b) $b = 4$ | (c) $a = 2$ | (d) $x = 3$ | (e) $x = 4$ | (f) $x = \frac{9}{2}$ |
| 3. 200 | 4. 40 | 5. $l = 20, b = 12$ | 6. 17, 19, 21 | | |
| 7. Sahil = 38 years, his son = 14 years | | | | | |

Formative Assessment-II

- | | | | | | | | | | |
|---------------------|---------------|-------------|----------------------|--------|---------------------------|--------------------|------------|--------------|--------------|
| A. 1. (a) | 2. (c) | 3. (d) | 4. (a) | 5. (b) | 6. (a) | 7. (c) | 8. (b) | 9. (d) | 10. (b) |
| B. 1. Perfect cubes | 2. odd number | 3. variable | 4. $4a^2 - 17a - 15$ | 5. 2 | 6. quartic or Biquadratic | 7. rational number | 8. factors | 9. Aryabhata | 10. variable |
| C. 1. F | 2. F | 3. F | 4. F | 5. F | 6. F | 7. T | 8. F | 9. T | 10. T |

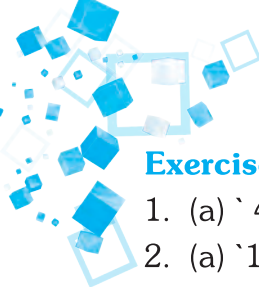
Summative Assessment-I

- | | | | | | | | | |
|--------------------------------------|------------------|---|---|--------------------------------|------------------|------------------------|-------------------|-------|
| A. 1. $x = 10$ | 2. 15 | 3. $x = 4$ | 4. $-\frac{2}{3}$ | 5. 71865×10^6 | 6. 81 | 7. 73 | 8. $7(2a - 3)$ | |
| 9. $x = -5$ | 10. 30^2 | | | | | | | |
| B. 1. | | | | | | | 2. $\frac{8}{15}$ | 3. 91 |
| 4. 30 | 5. $x = 3$ | 6. $x^5 + x^3 - x^2 - 1$ | 7. 2 | 8. $\frac{1}{5}, \frac{-1}{5}$ | 9. $\frac{5}{6}$ | | | |
| 10. 380000000000 | | | | | | | | |
| C. 1. $-3x^3y^2 + 3xy^4$ | 2. $\frac{2}{5}$ | 3. $\frac{-4}{13}, \frac{-3}{13}, \frac{-2}{13}, \frac{-1}{13}, \frac{0}{13}, \frac{1}{13}, \frac{2}{13}, \frac{3}{13}, \frac{4}{13}, \frac{5}{13}$ | 4. $x = \frac{17}{4}, y = \frac{-1}{4}$ | 5. $`30000$ | 6. 13 | 7. $13a^2 - 11b + 19c$ | 8. $(xy - 3z)^2$ | |
| 9. $-2m^4 + 3m^3 - 16m^2 + 30m - 19$ | 10. 21, 24 | | | | | | | |

Exercise - 10.1

- | | | | | |
|---------------------------|--------------------------------|-----------------------|-----------------------|-------------|
| 1. (a) $9\frac{1}{11}\%$ | (b) 29.03% | (c) $16\frac{2}{3}\%$ | (d) 12.5% | (e) 10% |
| 2. gain $11\frac{1}{9}\%$ | 3. $18\frac{3}{4}\%$ | 4. Loss = 5% | 5. Gain 12.5% | |
| 6. (a) $`450$ | (b) 10% | 7. (a) $`225$ | (b) $11\frac{1}{9}\%$ | 8. 20% loss |
| 10. 15% loss | 11. Gain % = $4\frac{1}{21}\%$ | 12. Loss 6.66% | 9. $11\frac{1}{9}\%$ | |





Exercise - 10.2

1. (a) ` 476 (b) ` 324.70 (c) ` 456 (d) ` 520.80
 2. (a) ` 110 (b) ` 500 (c) ` 400 (d) ` 800
 3. ` 750, ` 150 4. 800, ` 96 5. ` 638 6. 10 bananas 7. ` 500
 8. 23.75% 9. ` 800 10 9.76% 11. 14.5% 12. ` 10013. ` 720

Exercise - 10.3

1. ` 297.50 2. (a) 1170 (b) ` 425 3. ` 600 4. 12% 5. ` 600
 6. (a) 3% (b) 15% 7. ` 480 8. ` 3813 9. ` 900 10. ` 414
 11. ` 187 12. C.P. = ` 600, Profit = $33\frac{1}{3}\%$ 13. ` 937.5 14. 24%

Exercise - 10.4

1. Amount = ` 3136, C.I. = ` 636 2. ` 410 3. ` 32 4. ` 7493.90 5. ` 1891.50
 6. ` 648 7. ` 210 8. ` 8195.45 9. ` 124.86 10. ` 5796

Exercise - 10.5

1. (a) ` 307.50 (b) ` 1050 (c) ` 3101.40 2. ` 4147.20 3. ` 4913 4. ` 241 5. ` 21866
 6. ` 1951 7. ` 1600 8. ` 625 9. 3 years 10. 3087 11. ` 89600, ` 85400 12. 10 %

Exercise

1. (a) (i) (b) (i) (c) (ii) (d) (ii)
 2. (a) Profit = 42.79% (b) Loss = 16.66% (c) Profit = 12.5 % (d) Loss = 10%
 3. (a) 3% (b) 15% 4. ` 410 5. ` 8195.45 6. Loss = 20%
 7. Profit = 11.11% 8. C.P. = ` 750, Profit = ` 150 9. ` 7493.90

Exercise - 11.1

1. 110° , 70° , 110° 2. 120° , 60° , 120° , 60° 3. 65° , 115° , 65° , 115°
 4. $\angle C = 140^\circ$, $\angle D = 120^\circ$, 5. Do it yourself
 6. $\angle DAB = 150^\circ$, $\angle ADC = 30^\circ$, $\angle BCD = 150^\circ$, $\angle AOD = 80^\circ$,
 $\angle DOC = 100^\circ$, $\angle BOC = 80^\circ$, $\angle AOB = 100^\circ$, $\angle ACD = 70^\circ$, $\angle CAB = 70^\circ$, $\angle ADB = 20^\circ$, $\angle ACB = 80^\circ$,
 $\angle OBC = 20^\circ$ and $\angle DBA = 10^\circ$ 7. yes 8. yes
 9. (a) Diagonals of a parallelogram bisect each other (b) Alternate angles
 (c) A S A Congruency (d) Vertically opposite angles
 10. Do it yourself 11. Do it yourself
 12. No. Diagonals must be perpendicular 13. 50° 14. 10 cm
 15. Do it yourself 16. Do it yourself
 17. (a) yes, sss (b) yes 18. 12cm 19. Do it yourself 20. 25cm, 20cm
 21. Do it yourself 22. 12 cm
 23. (a) F (b) T (c) T (d) F (e) F (f) T (g) T (h) T

Exercise

1. (a) (iv) (b) (iv) (c) (ii) (d) (iii) (e) (i) (f) (iii) (g) (ii) (h) (i)
 2. $\overline{AD} \parallel \overline{BC}$; $\overline{AB} \parallel \overline{DC}$. So, in \parallel gm ABCD, the midpont of diagonal \overline{AC} is O.
 3. 50° 4. (a) F (b) T (c) F (d) T (e) T (f) F
 5. $x = 28^\circ; 80^\circ, 100^\circ, 80^\circ, 100^\circ$





Exercise - 12.1 Do it yourself

Exercise - 12.2 Do it yourself

Exercise

1. (a) (ii) (b) (iii) (c) (iii) (d) (iii) (e) (iii) (f) (i)
 (g) (iii) (h) (iii) Q.2 to Q.11 Do it yourself

Exercise - 13.1

1. 10 cm 2. 26 cm 3. 16. cm 4. 17 cm 5. 12 cm
 6. $\angle AMP = 90^\circ$, $\angle BMP = 90^\circ$ 7. Do it yourself 8. Do it yourself 9. 12 cm

Exercise - 13.2

1. 45° 2. 90° 3. 5 4. 120° 5. Do it yourself 6. Do it yourself
 7. Do it yourself 8. Do it yourself 9. 12cm

Exercise - 13.3

1. $m(\widehat{AC}) 40^\circ$, $m(\widehat{BD}) 40^\circ$, $m(\widehat{BC}) 140^\circ$
 2. Do it yourself
 3. (a) 90° (b) 270° (c) 160° (d) 200° (e) 250° (f) 110°
 4. (a) 50° (b) 310° (c) 130° (d) 230°
 5. $m(\widehat{ABC}) = 170^\circ$, $m(\widehat{ACB}) = 285^\circ$
 6. $m(\text{minor arc}) = 160^\circ$, $m(\text{major arc}) = 200^\circ$
 7. (a) $70^\circ, 70^\circ, 35^\circ, 35^\circ$, (b) $2x^\circ, 2x^\circ, x^\circ, x^\circ$
 8. Do it yourself

Exercise - 13.4

1. (a) 80° (b) 75° (c) 25° (d) 200° (e) 25°
 2. (a) $x = 60^\circ$, $y = 30^\circ$ (b) $x = 125^\circ$, $y = 250^\circ$, $z = 55^\circ$ (c) $x = 180^\circ$, $y = 90^\circ$
 3. 42° 4. Do it yourself 5. 30° 6. Do it yourself
 7. $65^\circ, 40^\circ, 75^\circ$ 8. $120^\circ, 140^\circ, 100^\circ$
 9. right triangle 10. 45° 11. $45^\circ, 60^\circ, 75^\circ$ 12. 50

Exercise

1. (a) (iii) (b) (iv) (c) (ii) (d) (i) (e) (ii) (f) (ii)
 2. 16 cm. 3. 17 cm. 4. 12 cm. 5. $75^\circ, 65^\circ, 40^\circ$

Exercise - 14.1

1. (a) (i) \rightarrow Side, (ii) \rightarrow Front, (iii) \rightarrow Top, (b) (i) \rightarrow Front, (ii) \rightarrow Side, (iii) \rightarrow Top,
 (c) (i) \rightarrow Front, (ii) \rightarrow Side, (iii) \rightarrow Top, (d) (i) \rightarrow Front, (ii) \rightarrow Side, (iii) \rightarrow Top,
 2. (a) (i) \rightarrow Front, (ii) \rightarrow Top, (iii) \rightarrow Side, (b) (i) \rightarrow Top, (ii) \rightarrow Side, (iii) \rightarrow Front,
 (c) (i) \rightarrow Top, (ii) \rightarrow Front, (iii) \rightarrow Side, (d) (i) \rightarrow Side, (ii) \rightarrow Front, (iii) \rightarrow Top,
 (e) (i) \rightarrow Side, (ii) \rightarrow Front, (iii) \rightarrow Top,
 3. Do it yourself.

Exercise - 14.2 Do it yourself





Exercise - 14.3

- (a) A prism becomes a cylinder as the number of sides of its base becomes larger and larger.
(b) A pyramid becomes a cone as the number of sides of its base becomes larger and larger.
- (a) $7 + 10 - 15 = 2$ (b) $9 + 5 - 12 = 2$
- (a) No (b) Yes (c) Yes 4. No. It can be a cuboid also.
- Possible, only if the number of faces are greater than or equal to 4.
- No 7. Only (b) and (d)

Exercise

- (a) (iii) (b) (ii) (c) (iii) (d) (i)
- (a) side view (b) front view (c) top view
- (a) $4 + 4 - 6 = 2$ (b) $5 + 5 - 8 = 2$ 4. (b) and (c)
- A map is a drawing of the earth or a part of it on the paper.
- The object that have three dimensions like length, breadth and height or depth are called 3-D shapes.
- Yes 8. Do it yourself.

Formative Assessment-III

- A. 1. (b) 2. (c) 3. (b) 4. (c) 5. (c) 6. (d) 7. (c) 8. (c) 9. (a) 10. (c)
- B. 1. cost price 2. major arc 3. quadrilaterals 4. adjacent sides
5. 90° 6. equal, perpendicular 7. cyclic 8. intercepts
9. prism 10. 360°
- C. 1. F 2. T 3. T 4. F 5. F 6. T 7. F 8. T 9. F 10. F

Exercise - 15.1

- 168m^2 2. 11.25m^2 3. ` 1771 4. Length = 40 m, breadth = 16m 5. 420m^2
- 5m 8. 11m 9. ` 437 10. 8.2m
- 14.7m 12. 8m

Exercise - 15.2

- (a) 60cm^2 (b) 6cm^2 (c) 1680cm^2 2. 1680m^2 3. 18m 4. (a) 140.29m^2 (b) 173.20m^2
- (c) 52.39cm^2 5. 84cm^2 6. 453.6m^2 7. 200cm 8. 32 9. 160m^2
- (a) 0.46m^2 (b) 1.32m (c) 0.16m^2 11. 0.9m 12. 5m

Exercise - 15.3

- 24m^2 2. 6.2cm 3. 312cm^2
- (a) 90cm^2 (b) 252cm^2
- (a) 1.6m^2 (b) 0.625m^2 (c) 2.025m^2
- 24cm 7. 8.5cm 8. 228dm^2 9. 20cm 10. 38cm 11. 21.57cm
- 152cm^2 13. 9m 14. 3m 15. 900cm^2 16. ` 960 17. $23\text{cm}, 17\text{cm}$

Exercise

- (a) (ii) (b) (iii) (c) (i) (d) (iv) (e) (iii) (f) (iii)
- 60cm^2 3. 36cm^2 4. $96\text{cm}^2; 40\text{cm}$ 5. 8cm 6. 8.5cm 7. 9m 8. 15m





Exercise - 16.1

1. 2310 cm^3 2. ` 281.60 3. 1:4 4. 450
 5. 112 m 6. 539 cm^3 7. 24.5 cm 8. 70cm 9. 509.14 dm^2
 10. 1 hrs 40 min 11. 3168 cm^2 12. 704 cm^3 14. 0.37 cm 14. 22 : 15
 15. 125 m 16. $\sqrt{2} : 1$ 17. ` 440

Exercise - 16.2

1. (a) 154 m^3 (b) 27500 cm^3 (c) 6930 cm^3 2. 792 m^2 3. 1570 cm^3
 4. 192.5 cm^2 5. $88\sqrt{58} \text{ cm}^2$ 6. 3 : 1 7. 314.28 cm^3
 8. 2cm 9. 1885.71 cm^3 , 1508.57 cm^2 10. 1546.28 m^3 11. 42 : 33 : 11
 12. Becomes 2 times

Exercise - 16.3

1. (a) 179.66 cm^3 (b) 4851 cm^3 (c) 268.19 cm^3
 2. (a) 4158 cm^2 (b) 73.92 cm^2 (c) 374.22 cm^2 3. 89.83 cm^3
 4. 2772 cm^2 , 4158 cm^2 5. 8 6. 1000 7. 2 : 1 8. 11.94 cm
 9. 16 10. 88 cm^2 11. $905\frac{1}{7} \text{ cm}^2$ 12. 42 cm 13. 1 : 4 14. ` 32.34
 15. 36 m

Exercise

1. (a) (ii) (b) (iv) (c) (ii) (d) (i) (e) (iv) (f) (i) 2. 1 hour 40 minutes 3. 3168 cm^2
 4. 704 cm^3 5. (a) 154 m^3 (b) 27500 cm^3 (c) 6930 cm^3 6. 2 cm 7. 314.28 cm^3

Exercise - 17.1

1. 5.5 2. 12.9 3. 4.5 4. 11 5. (a) 26.5 (b) 34
 6. (a) 3.1, 3.0, 2.9, 2.9, 2.8, 2.8, 2.7, 2.7, 2.6, 2.5, 2.5, 2.4, 2.3, 2.2, 2.1 (b) 3.1 kg (c) 1 kg (d) 4
 7. (a) 154 cm (b) 128 cm (c) 26 cm (d) 143 cm
 8. 19 9. 14 10. 140 11. 35 12. 30

Exercise - 17.2

1. Do it yourself 2. Do it yourself 3. Do it yourself 4. Do it yourself 5. Do it yourself
 6. Do it yourself 7. 54.6 kg 8. Do it yourself 9. 143.6 cm

Exercise - 17.3

 Q. 1. to 8. Do it yourself

9. (a) 10 – 20 (b) 20 – 30 (c) 15, 25, 35, 45, 55, 65 (d) 10
 10. (a) 4 - 5 hours (b) 34 students (c) 14 students

Exercise

1. (a) (i) (b) (iv) (c) (ii) (d) (iii) (e) (iii) (f) (ii) (g) (i)
 2. (a) Lower limit - 65; Upper limit = 70 (b) Lower limit = 110; Upper limit = 125
 (c) Lower limit - 0; Upper limit = 10 (d) Lower limit - 15; Upper limit = 25
 3. (a) 8 (b) 12 4. Do it yourself
 5. (a) Number of cars sold in the month of July, August, September, October, November, December.
 (b) 2500 cars (c) 417 (d) September, October, November (e) July and December



Exercise -18.1

- Do it yourself
- (i) -2 (ii) 3 (iii) -5 (iv) -8 (v) -0 (vi) -3 (vii) 2 (viii) 0
- (i) 7 (ii) 8 (iii) -9 (iv) -5 (v) 0 (vi) 8 (vii) 0 (viii) -8
- O (0, 0)
- (i) I Quadrant (ii) IV Quadrant (iii) III Quadrant (iv) II Quadrant
- Do it yourself
- (i) A, B, E (ii) B, F
- A (2, 1), B (-1, 1), C (-2, -1), D (2, -4), E (4, 0), F (0, 3), G (-5, 0), H (0, -2)

Exercise -18.2

- (i) Do it yourself (ii) (a) 16 (b) 20 (c) 24
- (ii) (a) 9 (b) 25 (c) 36
- (ii) (a) 8 (b) 10 (c) 12
- (i) Yes (ii) No
- (i) Yes (ii) ` 200 (iii) ` 3500

Exercise

- (a) (i) (b) (iii) (c) (ii) (d) (iv) (e) (i) (f) (ii) (g) (iii) (h) (ii) (i) (i) (j) (i)
- (a) I (b) II (c) III (d) IV
- No
- (i) (-6, 0) (ii) (0, -5)
- Linear graph
- Do it yourself
- (a) 4 units (b) 5 units (c) 5 units (d) 5 units
- A(1, 2), B(-3, 1), C(-5, -1), D(3, -3) E(4, 0)

Formative Assessment-IV

- A. 1. (c) 2. (b) 3. (a) 4. (a) 5. (b) 6. (c) 7. (b) 8. (d) 9. (a) 10. (d)
- B. 1. $\sqrt{l^2 + b^2 + h^2}$ 2. $\frac{\sqrt{3}}{4}a^2$ 3. base \times altitude (height) 4. lbh 5. $\frac{1}{3}\pi r^2h$
6. axes 7. coordinate 8. two 9. base \times height 10. square metre
- C. 1. F 2. F 3. T 4. T 5. F 6. F 7. T 8. T 9. T 10. T

Summative Assessment-II

- A. 1. ` 150, 25% 2. $60^\circ, 60^\circ, 120^\circ, 120^\circ$ 3. number of sides = 6
4. Do it yourself 5. Do it yourself
6. A prism becomes a cylinder as the number of sides of its base becomes larger and larger.
7. 6 cm 8. 420 m^2 9. $r = 8\text{ cm}$ 10. 11
- B. 1. $9\frac{1}{11}\%$ 2. 30.808 cm^3 3. 21 cm^2
4. $AB \parallel DE, AB \parallel FG, AB \parallel HI, DE \parallel FG, DE \parallel HI, FG \parallel HI$ 5. (a) 160° (b) 80°
6. 60 dm^2 7. (a) $F + V - E = 2$ (b) $F + V - E = 2$ 8. 34.65 litres
- $7 + 5 - 10 = 2$ $9 + 5 - 12 = 2$
9. 11498.66 cm^3 10. 1540 cm^3
- C. 1. ` 38132.50° 3. 25 cm, 20 cm 4. ` 196.25 5. Do it yourself
6. No, it can be cuboid also 7. 26 cm 8. Do it yourself
9. lengths = 25, 50, 25, 50 (in cm) 10. (7, 0) (0, 7)

