VIII – MATHS WORKSHEET

Square and Square Roots

1-Which of the following numbers are perfect squares?

(a)3364   (b)4489   (c)4358

2-Using the property of squares , find the value of the following.

(a)24^2 - 23^2 (b)$50^2 – 49^2$ (c)$105^2 – 104^2$

3-Without adding find the sum.

(a)1+3+5+7+9

(b)1+3+5+7+9+11+13+15_17+19+21+23+

4-Find the square root of the following by prime factorisation method.

(a)1024   (b)8836   (c)8464

5-Find the smallest number by which 2475 must be multiplied to get a perfect square .

6-4096 soldiers are arranged in an auditorium in such a manner that there are as many soldiers in a row as there are rows in the auditorium.How many rows are there in the auditorium?

7-Find the least perfect square exactly divisible by each one of the numbers 4, 5, 10.

8-Find the least square number exactly divisible by each one of the numbers 6, 9, 10, 15 and 20 .

9-Find the least number which must be added to 4215 to make it a perfect square.

10-Find the lest number which should be subtracted from 984 to make it a perfect square .Also find the square root of this perfect square.

11-The area of the square field is $8464m^2$. A man takes 3 rounds of this field. Find the distance covered by him.

12-Find the square root of the following decimal numbers.

(a)72.25   (b)86.49   (c)75.69   (d)9.61 (e)0.16

13-
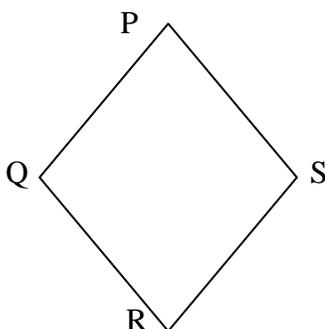
PQRS is a rhombus. PQ=12cm QS=16cm.

Find the side of the rhombus.

VIII – MATHS WORKSHEET

14-Express 81 as the sum of 9 odd numbers.

15-How many numbers lie between the squares of the following numbers?

(a)15 and 16   (b)56 and 57

16-Express the following as the sum of two consecutive integers.

(a)21^2 (b)13^2 (c)19^2

VIII – MATHS WORKSHEET

Triangles

1) Draw a rough sketch of ΔPQR in which PS is an altitude interior of triangle.
2) ΔXYZ is right angled a X, where the three altitudes meet?
3) Two angles of a triangle are 30^0 and 70^0, Find the third angle.
4) In a triangle measures of two angles are equal and third angle is 40^0. What are the measures of the equal angles?
5) Measures of two angles of a triangle are equal and third angle is thrice the measure of one of the equal angles. Find the measures of the angles of the triangle.
6) The angles of a triangle are in the ratio 1:3:5, find the angles of the triangle.
7) Exterior angle of a triangle is 120^0 and one of its opposite interior angle is 70^0, find the measure of the other two angles.
8) From the figure find the value of x.
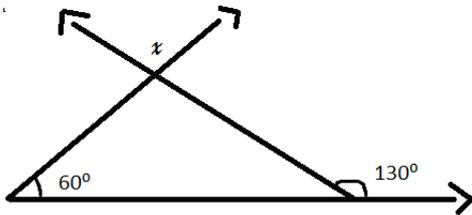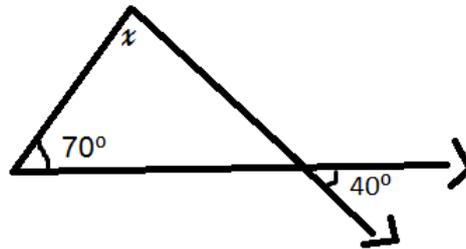
(i)   (ii)

9) Find the value of Y from the following figure, if PQ = PR and QS = QR ∟QPR = 30^0 ;
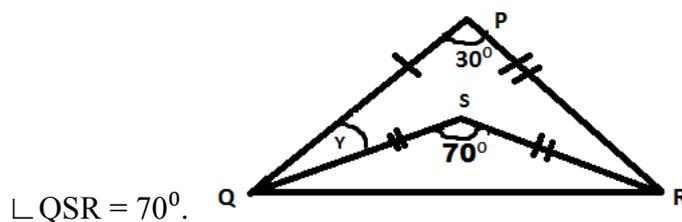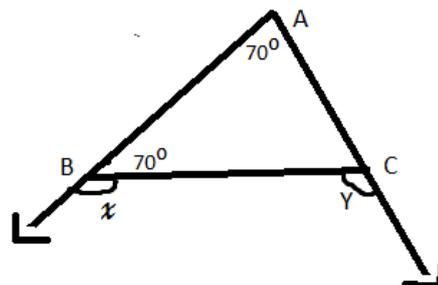
∟QSR = 70^0.

10) In figure ∟A = 70^0, ∟CBA = 70^0. Find x and y.

11) In figure $\llcorner P = 30^0$, $\llcorner PEF = 70^0$ and EF || QR. Find $\llcorner Q$ and $\llcorner R$.
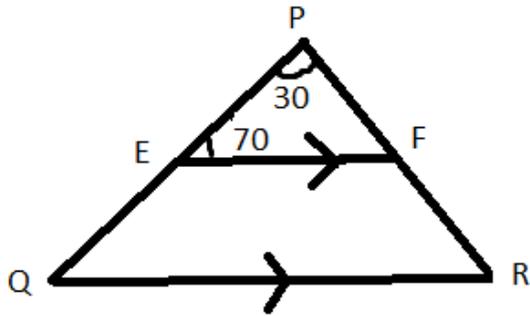
VIII – MATHS WORKSHEET

Squares and Square root

1. A natural number is called a _____ or _____ if it is the square of some natural number.

2. $\sqrt{0.09}$ = _____ .

3. $\dfrac{1}{\sqrt{0.09}}$ x $\sqrt{5.76}$ = _____ .

4. $121^2 - 120^2$ = _____ .

5. Is (1, 2, 3) a Pythagorean triplet ?

6. Is 2352 a perfect square? If not, find the smallest number by which 2352 must be multiplied so that the product is a perfect square. Find the square root of the perfect square obtained.

7. Find the smallest number by which 9408 must be divided so that the quotient is a perfect square. Find the square root of the perfect square obtained.

8. The student of class VIII of a school donated Rs.2401 for prime ministers National relief fund. Each student donated as many rupees as the number of students in the class. Find the number of students in the class.

9. Find the least number which must be subtracted from 18265 so as to get a

perfect square.

10. Find the least number which must be added to 893304 to obtain a perfect square.

11. Find the square root of 2.9 correct to two places of decimal.

12. Find the square root of $11\,^2/_3$ correct to two places of decimal.

13. Find the square root of $21\,\underline{51}$.

$$169$$

14. Find the least perfect square which is divisible by 5 , 6 and 8.

15. Find the smallest five digit number which is a perfect square.

16. Find the other two members of a Pythagorean triplet, one of the number of which is 16.

17. Check, is (12 , 35, 37) a Pythagorean triplet?

VIII – MATHS WORKSHEET

Squares and Square Roots

1. Find the square root of 6400
2. Is 90 a perfect square
3. Is 2352 a perfect square? If not find the smallest multiple of2352 which is a perfect square. Find the square root of the new number.
4. Find the smallest number by which 9408 must be divided so that the quotient is a perfect square. Find the square root of the quotient.
5. Without doing any calculation, find the numbers which are surely not perfect square.
   i.) 153   ii.) 257   iii) 408   iv.) 441

6. Find the square root of the following numbers by the prime factorisation method.
   i.) 400   ii.) 9604   iii.) 8100   iv.)1764   v.) 5929   vi.) 9216

7. For each of the following numbers, find the smallest whole number by which it should be multiplied so as to get a perfect square. also find the square root of the square number so obtained.
   i.) 252   ii.) 2925   iii.) 396   iv.) 2028   v.) 1458   vi.) 768

8. For each of the following number, find the smallest whole number by which it should be divided so as to get a perfect square. Also find the square root of the square number so obtained.
   i.) 252   ii.) 180   iii.) 1008   iv.) 2028   v.) 1458   vi.) 768

9. The students of class viii of a school donated Rs 2401 in all, for prime minister's national relief fund. each student donated as many rupees as the no: of students in the class. Find the no: of students in the class.
10. 2118 plants are to be planted in a garden in such a way that each row contains as many plants as the no: of rows. Find the no: of rows and the no: of plants in each row.
11. Find the smallest square no: that is divisible by each of the no: 4, 9and10.
12. Find the smallest square no: that is divisible by each of the no: 8, 15 and 20.
13. Find the least no: that must be subtracted from 5607 so as to get a perfect square. Also find the square root of the perfect square.
14. Find the greatest 4- digit no: which is a perfect square.
15. Find the least no: that must be added to 1300 so as to get a perfect square .Also finds the square root of the perfect square.
16. Find the square root of 12.25.
17. Area of a square plot is 2304m^2 . find the side of the square plot. also find the square root of the perfect square.
18. find the square root of each of the following no: by division method.

i.) 2304   ii.) 4489   iii.) 3481   iv.) 529   v.) 3249   vi.) 1369   vii.) 5776   viii.)7921
ix.) 576   x.) 1024   xi.) 3136   xii.) 900

19. Find the square root of the following decimal no:
    2.56   ii 7.29   iii. 51.84   iv 42.25   v 31.36

20. Find at least no: which must be subtracted from each of the following no:so as to get a perfect square. Also find the square root of the perfect square so obtained.
    i. 402   ii.1989   iii. 3250   iv. 825   v. 4000

21. Find the least no: which must be added to each of the following no: so as to get a perfect square. Also find the square root of the perfect square so obtained.
    i. 525   ii. 1750   iii. 252   iv. 1825   v. 6412

22. Find the length of the side of a square whose area is $441m^2$.

23. In a right triangle ABC angle B = 90°

24. a. If AB=6 cm, BC=8cm, find AC   b. If AC=13cm,BC= 5cm, find AB

25. A gardener has 1000 plants. He wants to plant this in such a way that the no: of rows and the no: of columns remain same. Find the minimum no: of plants he needs more for this.

26. There are 500 children in a school. for a P.Ed. drill. They have to stand in such a manner that the no. of rows is equal to the no: of columns. How many children would be left out in this arrangement? [least no :]

Cubes and Cube Roots

1. A perfect cube can end with exactly _____ zero.

2. If a and b are +ve integers such that $a^2 > b^2$ then a^3 ___b^3.

3. If a^2 ends in 5 then a^3 ends in _____.

4. If m is a cube root of n such that $m^3 =$ _____.

5. The cube root of a quotient of two perfect cubes is the _____ of their cube roots.

6. Cube root of a rational number whose numerator and denominator are perfect cubes is also a _____ number.

7. A number n is a perfect cube if there is an integer m such that n=_____.

8. $\sqrt[3]{xy}$ = _____x_____.

9. $\sqrt[3]{\dfrac{p}{q}}$ =_____(q≠0, where p & q are perfect cubes.)

10. The cube root of a negative perfect cube is_____.

11. $(x^m)^n = x^{——}$

12. $y^n x^n = \_\_ (\_\_\_\_\_)^n$

13. $x^m \div x^n =$_____ (if m>n)

14. $\sqrt[3]{625} =$_____

16. Find $\sqrt[3]{\left(\frac{2}{3}\right)^4} =$_____

17. $8^{-2/3} = \frac{1}{4}$ (True or False)

18. The radical form of $(y^p)^{1/q} =$ _____

19. The index in $\sqrt[4]{2}$ _____.

20. The exponential form of cube root of 24 is _____.

21. $(0.04)^2 =$_____.

22. $\sqrt{0.04} =$_____.

23. $\sqrt{x}$ is rational no. if x is a _____.

24. $(x^{-4})^{-7} =$_____ for every rational no. x>0.

25. The reciprocal of $(x/y)^{-1}$ is _____.

26. 2700 is a perfect cube. True/False?

27. Cube root of a −ve no. does not exist. True/False?

28. Find the values of the following:

a) $\sqrt[3]{\frac{27}{64}}$ b) $\sqrt[3]{-1728}$ c) $\sqrt[3]{48228544}$

d) $\sqrt[3]{2744}$ e) $\sqrt[3]{74088}$ f) $\sqrt[3]{-157464}$

29. Find the cubes of the following:

a) 7   b) 270   c) 89   d) 3.4

e) 7/100   f) 4.2   g) 302   h) 21

30. What is the smallest no. by which 392 must be multiplied so that the product is a perfect cube?

31. What is the smallest no. by which 675 may be multiplied so that the product is a perfect cube?

32. Is 243 a perfect cube?

33. Is 392 a perfect cube? If not, find the smallest natural number by which 392 must be multiplied so that the product is a perfect cube.

34. Is 53240 a perfect cube? If not, then by which smallest natural number should 53240 be divided so that the quotient is a perfect cube?

35. Is 1188 a perfect cube? If not, then by which smallest natural number should 1188 be divided so that the quotient is a perfect cube?

36. Is 68600 a perfect cube? If not, find the smallest number by which 68600 must be multiplied to get a perfect cube.

37. Which of the following numbers are not perfect cubes?

 a) 216   b) 128   c) 1000   d) 100   e) 46656

38. Find the smallest number by which each of the following numbers must be multiplied to obtain a perfect cube.

   a) 243   b)256   c)72   d)675   e)100

39. Find the smallest number by which each of the following numbers must be divided to obtain a perfect cube.

   a) 81   b) 128   c) 135   d) 192   e) 704

40. Parikshit makes a cuboid of plasticine of sides 5cm, 2cm, 5cm. How many such cuboids will he need to form a cube?

41. Find the cube root of each of the following numbers by prime factorization method:

   a) 64   b) 512   c) 10648   d) 27000   e) 15625

   f) 13824   g) 110592   h) 46656   i) 175616   j) 91125

42. State true or false:

a) Cube of any odd number is even.

b) A perfect cube does not end with two zeros.

c) If square of a number ends with 5, then its cube ends with 25.

d) There is no perfect cube which ends with 8.

e) The cube of two digit number may be three digit number.

VIII – MATHS WORKSHEET

Exponents & Powers

1. **Find the value of each of the following**
   a. 13^2
   b. 5^3
   c. 2^4
   d. 11^2
   e. $(-3)^3$
   f. $(-1)^6$

2. **Simplify**
   a. 3×10^2
   b. $2^5 \times 5^3$
   c. 0×10^4
   d. $\left(\frac{3}{4}\right)^3$
   e. $\left(\frac{-2}{3}\right)^4$

3. **Express each of the following in exponential form**
   a. $\left(\frac{-5}{7}\right) \times \left(\frac{-5}{7}\right) \times \left(\frac{-5}{7}\right) \times \left(\frac{-5}{7}\right)$
   b. $-5 \times -5 \times -5$
   c. $x \times x \times x \times x \times a \times a \times b \times b \times b$
   d. $(-2) \times (-2) \times (-2) \times (-2) \times a \times a \times a$

4. **Express each of the following numbers as a product of powers of their prime factors.**
   a. 36   b. 675   c. 392   d.864   e. 450   f.1800

5. **Using laws of exponents , simplify**
   (i) $3^6 \times 3^5$
   (ii) $(7^2)^3 \div 7^3$
   (iii) $2^{20} \div 2^5$
   (iv) $2^4 \times 5^4$
   (v) $(2^0 + 3^0)(4^0 + 6^0)$
   (vi) $\frac{7^3}{5^3}$

6. **Simplify and express each of the following in exponential form :**

(i) $\dfrac{2^{15}}{2^7 \times 2^3}$ (ii) $(3^5 \times 3^2)^3$ (iii) $[(2^3)^4 \times 2^8] \div 2^{12}$

(iv) $\dfrac{5^4 \times x^{10} y^5}{5^4 \times x^7 y^4}$ (v) $\left(\dfrac{2}{3}\right)^5 \times \left(\dfrac{3}{5}\right)^5$ (vi) $\dfrac{9^8 \times (x^2)^5}{(27)^4 \times (x^3)^2}$

(vii) $\dfrac{3^2 \times 7^8 \times 13^6}{21^2 \times 91^3}$ (viiii) $\dfrac{10 \times 5^{n+1} + 25 \times 5^n}{3 \times 5^{n+2} + 10 \times 5^{n+1}}$

7. **Write the numbers in expanded forms :**

   a) 20068 (b) 423719 (c) 680071 (d)5004132

8. **Find the number :**

   (a) $5 \times 10^5 + 4 \times 10^4 + 2 \times 10^3 + 3 \times 10^0$

   (b) $9 \times 10^6 + 8 \times 10^4 + 7 \times 10^2 + 6 \times 10^0$

   (c) $3 \times 10^4 + 4 \times 10^3 + 5 \times 10^0$

9. **Express in the standard form :**

   (a) 3,18,65,00,000 (b) 786.3×10^4 (c) 5,00,00,000

   (b) 42634.7 (d) 4786. 3460

10. **Write the numbers in the usual form :**

   (a) 4.83×10^7 (b) 3.64×10^5 (c) 7.3×10^3

Answers :

1) (a) 169 (b) 125 (c) 16 (d) 121 (e) -21 (f) $+1$

2) (a) $3 \times 100 = 300$ (b) $4 \times 125 = 600$ $(c) 0$ $(d) \dfrac{9}{16}$ (e) $\dfrac{16}{81}$

4) (a) $3^2 \times 2^2$ (b) 5^4 (c) $2^3 \times 7^2$ (d) $2^5 \times 3^3$

   (e) $2 \times 3^2 \times 5^2$ (f) $2^3 \times 3^2 \times 5^2$

5) (i) 3^{11} (ii) 7^3 (iii) 2^{15} (iv) $(10)^4$ (v) 4

   (vi) $\left(\dfrac{7}{5}\right)^3$

6) (i) 2^5 (ii) 3^{21} (iii) 2^8 (iv) $x^3 y$ (v) $\left(\dfrac{2}{5}\right)^5$ (vi) $(3x)^4$

   (vii) $7^5 \times 13^5$ (viii) $\left(\dfrac{3}{5}\right)$

Exponents (Powers)

1. Simplify and write in exponential form:

    a. $(-5)^3 \text{X} (-5)^4$ b. $P^3 \text{ X } P^{-10}$

    c. $3^5 \text{X} 3^{-10} \text{X} 3^6$ d. $(2^5 \div 2^8)^5 \text{ X } 2^{-5}$

    e. $(-4)^{-3} \text{ X } (5)^3 \text{ X } (-5)^{-3}$ f. $(-3)^4 \text{X} \left(\frac{5}{3}\right)^4$

    g. $\frac{1}{8} \text{X} 3^{-5}$ h. $(-4)^5 \div (4)^8$

2. Find the value of:

    a. $\left(\frac{2}{3}\right)^{-2}$ b. $\left[\left(\frac{1}{3}\right)^{-2} - \left(\frac{1}{2}\right)^{-3}\right] \div \left(\frac{1}{4}\right)^{-2}$

    c. $\left(\frac{5}{8}\right)^{-7} \text{ X } \left(\frac{8}{5}\right)^{-5}$ d. $(3^0 + 4^{-1}) \text{ X } 2^2$ e.

    $(2^{-1} \text{ X } 4^{-1}) \div 2^{-2}$ f. $\left(\left(\frac{1}{2}\right)^{-2} + \left(\frac{1}{3}\right)^{-2} + \left(\frac{1}{4}\right)^{-2}\right)$

    g. $(3^{-1} + 4^{-1} + 5^{-1})^0$ h. $\left\{\left(\frac{-2}{3}\right)^{-2}\right\}^2$

    i. $\dfrac{8^{-1} \text{X} 5^3}{2^{-4}}$ j. $(5^{-1} \text{X} 2^{-1}) \text{ X } 6^{-1}$

    k. $\left\{\left(\frac{1}{3}\right)^{-1} - \left(\frac{1}{4}\right)^{-1}\right\}^{-1}$ l. $\left(\frac{5}{8}\right)^{-7} \text{ X } \left(\frac{8}{5}\right)^{-4}$

    m. $\dfrac{25 \text{ X } t^{-4}}{5^{-3} \text{ X} 10 \text{X} t^{-8}}$ n. $\dfrac{3^{-5} \text{ X } 10^{-5} \text{ X } 125}{6^{-5} \text{ X } 6^{-5}}$

3. Evaluate :

    a. 3^{-2} b. $(-4)^{-2}$ c. $\left(\frac{1}{2}\right)^{-5}$ d. $1/3^{-2}$ e. 2^{-3}

4. Find the multiplicative inverse of the following :

    a. 2^{-4} b. 10^{-5} c. 7^{-2} d. 5^{-3}

    e. 10^{-100}

5. If $\frac{m}{n} = \left(\frac{5}{7}\right)^4 \div \left(\frac{5}{7}\right)^0$ Find the value of $\left(\frac{m}{n}\right)^2$ if m$=-3$ n$=4$

6. Find the value of x^{-2} if x$= \left(\frac{-2}{5}\right)^{-3} \div \left(\frac{5}{6}\right)^0$

7. What should $\left(\frac{7}{9}\right)^{-3}$ be divided so that the quotient becomes 9?

8. What should $\left(\frac{2}{5}\right)^4$ be multiplied so that product becomes 25?

9. Express each of the following rational number in exponential form:

a. $\dfrac{1}{343}$ b. $\dfrac{-25}{216}$ c. $\dfrac{64}{27}$ d. $\dfrac{243000}{729000}$

10. Simplify and express the result as powers of 2:

a. $\{(\tfrac{1}{2})^3\}^4 \div \{(\tfrac{1}{2})^4\}^3$ b. $(3^0 + 5^0) \div (4^0 + 2^0)$

11. Express the following as a rational number:

i. $(\tfrac{-7}{8})^2$ ii. $(\tfrac{-2}{7})^3$ iii. $(\tfrac{4}{-5})^4$

.iv. $(\tfrac{11}{8})^3$ v. $(\tfrac{-2}{3})^3$ vi. $(\tfrac{-5}{-7})^2$

12. Express the following as a rational numbers in power notation:

i. $\dfrac{81}{256}$ ii. $\dfrac{-27}{125}$ iii. $\dfrac{-216}{-512}$ iv. $\dfrac{-16}{81}$

v. $\dfrac{256}{6561}$ vi. $\dfrac{1}{-3125}$ vii. $\dfrac{1}{64}$ viii. $\dfrac{100}{9261}$

13. Simplify:

i. $[-1/3 - (7/5)^2] \times (3/5)^2$ ii. $(-3/8)^3 \times 4^3 \times (2/3)^2$

iii. $[(4/5)^2 + (5/-7)^2] \times (2/5)^2 \div (-4/5)^3$

iv. $(-3/8)^2 \times (5/6)^3 \div [(\tfrac{-5}{3})^4 - (\tfrac{2}{3})^5] \div (4/9)^2$

14. Find the reciprocal of:

i) $(-7/3)^2$ ii) $(\tfrac{2}{3})^5$ iii) $(-6)^3$ iv) $(2/-3)^3$

$\times (3/-4)^2$ v) $(2/3)^2 \times (3/4)^2$

15. Find the absolute value of :

i)$(2/3)^3$ ii) $(-4/7)^2$ iii) $((5/-8)^3$ iv) $(-11/13)^2$

16. Which of the two rational numbers $(-3/5)$ and $(3/5)$ is smaller? Insert four rational numbers between them.

17. Find the product of the cube of $(-2/3)$ and the square of $(4/-5)$.

18. Fill in the blanks:

i) $(-2)^4 \times (-2)^5 = (-2)^{-----}$ ii) $(-3)^{11} \div (-3)^{15} = (1/-3)\_\_\_\_$ iii) $(4^2)^3 = $

(4)_____ iv$(-\tfrac{2}{5})^6 \div (-\tfrac{2}{5})^2 = (-\tfrac{2}{5})$ _____

v) $\left(\frac{4}{-5}\right)^4 \times \left(\frac{4}{-5}\right)^7 = \left(\frac{4}{-5}\right)$_____   vi) $\left[(-6)^3\right]^4 = (-6)$_____   9.

19. Simplify:

   i) $(3/4)^2 \times (3/4)^3$ ii) $(-2/7)^2 \times (-2/7)^3$

   iii) $(-7/8)^4 \div (-7/8)^2$ iv) $(1/3^2)^3$

20. Simplify and express the result in power notation:

   i) $(7/-4)^4 \times (7/-4)^6$ ii) $(3/8)^{10} \div (3/8)^6$

   iii) $(-5/2)^3 \div (-5/2)^7$ iv) $[(-3/4)^2]^3$

   v) $(-5/7)^6 \div (-5/7)^3$ vi) $[(-3/4)^2]^3$

   vii) $[(-5/7)^4]^5$

21. Find the value of:

   i) 3^{-4} ii) $(-4)^{-3}$ iii. $\left(\frac{2}{3}\right)^{-3}$

   iv) $\left(\frac{-3}{7}\right)^{-2}$ v) $\left(\frac{5}{-6}\right)^{-3}$ vi) $(-3)^{-1}$

22. Express the following as a rational number with positive exponent by using laws of exponents:

   i) $(3/4)^{-2}$ ii) $(-7/8)^{-3}$ iii) $[(3^{-3})^4]$ iv) 3^{-4}
   $\times 3^{-2}$ v) $(3)^{-4} \times (5)^{-4}$ vi) $3^7 \times 3^{-4} \div 3^5$

23. Express the following as a rational number with negative exponent by using laws of exponents:

   i) $(1/3)^4$ ii) $[(3^2)^3]$
   iii) $-4^2 \times -4^3 \times -4^7$ iv) $(5/-6)^2 \times \left(-\frac{6}{5}\right)^3 \times 1/-6$

   v) $[(-3/8^2)^3]$

24. Find the value of :

   i) 5^0 ii) $2^0 + 4^0 + 5^0$ iii) $\left(\frac{3}{4}\right)^{5+3+8}$

iv) $(-7)^{6\times3-8-10}$ v) $(2° \times 4° \div 5° + 3°) \div 7°$

25. By what number should we multiply 5^{-4} so that the product may be equal to 25 ?

26. By what number should 7^{-3} be divided so that the quotient may be equal to 7^{-2} ?

27. Find the value of x, such that $(3/5)^{-3} \times (3/5)^{-12} = (3/5)^{-5x}$.

28. Find the value of y, such that $(2/-3)^{-9} \times (-2/3)^{-3} = (-2/3)^{7y+2}$

29. Find the reciprocal of the rational number :

  $[(2/3)^{-3} \times (6/7)^2] \div [(3/7)^2 \times (3/4)^{-5}$

30. If x= $(2/3)^{-4} \div (4/6)^{-3} \times (3/4)^2$, find x^{-2}

31. If y= $(5/2)^2 \times (5/3)^4$, then find the value of y³.

32) Find the value of b if

  a) $4^3 \times 4^{b-2} = 4^{-2}$ b) $8^{-6} / 8^b = 8^4$

  c) $(6/7)^b \times (6/7)^4 = (6/7)^{-4}$ d) $(1/2)^{2b} / (1/2)^2 = (1/2)^4$

33) Simplify

  i) $[(1/3)^{-1} + (1/6)^{-1}]^2 \times 4^2$

  ii) $(5/-6)^4 / (5/-6)^n = [(5/6)^2]^3$

  iii) $(-7)^{2n} \times (-7)^3 = (-7)^9$

  iv) $[(1/2)^{-3} – (1/3)^{-2}] \times (1/4)^{-3}$

  v) $(6/7)^4 \times (6/7)^{-3} \times (1/2)^{-4} \times (3/5)^{-2}$

  vi) $(5/2)^3 \times (5/2)^{-1} \times [(2/3)^2]^{-2} \times 1/16$

34) Express in positive exponents

  a) $(1/2)^{-3}$ b) $(-3/7)^{-5}$ c) $(-3)^{-6}$ d) $(2)^{-3}$

35) Simplify and express with positive exponents.

  a) $(4/5)^{-4} \times (6)^{-4}$

b) $(3/5)^{-8} \times (10/9)^{-8}$

c) $(-3)^{-8} \times (-1/9)^{-8}$

d) $[(5/4)^{-2} \times (2/5)^{-3}]^{-1}$

36) a) By what no. should $(1/5)^2$ be multiplied so that the product becomes 15.

 b) By what no. should $(7/11)^0$ be multiplied so that the product becomes $(13/15)^0$.

37) a) By what no. should $(3/7)^{-2}$ be divided so that the quotient becomes 7.

 b) By what no. should $(-18)^{-1}$ be divided so that the quotient may be equal to $(-3)^{-1}$.

VIII – MATHS WORKSHEET

Exponents

I.   Find x, if

1. $1^0 + 2^1 + 3^x = 4$

2. $x^2 = 2^2 + 4^2 + 5^2 + 6^2$

3. $x = a^{p-q} \times a^{q-r} \times a^{r-p}$

4. $3^4 \times 9^{x+2} = (\frac{1}{9})^{-3}$

5. $(\frac{3}{2})^2 \times (\frac{2}{3})^{5-2x} = \frac{2}{3}$

6. $\frac{1}{x} = [(-\frac{1}{2})^2]^3 \div 2^{-4}$

II   By what number should $(-\frac{2}{7})^{-3}$ be divided so that the quotient be 49 ?

III   Simplify : $\left[\frac{x^a}{x^b}\right]^{a+b} \left[\frac{x^b}{x^c}\right]^{b+c} \left[\frac{x^c}{x^a}\right]^{c+a}$

ANSWERS :

I.   **1.** x = 0   **2.** x = 9   **3.** x = 1   **4.** x = -1

        5. x =   **6.** X = 4

II $\frac{-7}{8}$

III   1

VIII – MATHS WORKSHEET

Algebraic Expressions

1. Factorise the numerator and simplify :

i) $\dfrac{a^2 + 4a + 4}{a + 2}$ ii) $\dfrac{m^2 - 49}{m + 7}$

2. Find the binomial which is a common factor of

$a^2 - 4b^2$ and $a^2 - 4ab + b^2$

3. Factorise completely :

i) $x^2 y + 3x + xy + 3$ ii) $4x^2 + 4xy + y^2 - z^2$

iii) $a^2 (x+5) - (x+5)$ iv) $a^5 - a$

v) $\frac{1}{2} m^2 - 8$ vi) $a^2 - 2ab + b^2 - c^2$

4. Divide :

i) $x^3 + 1$ by   x+1   ii) $x^3 + 3x^2 - 4$ by x-1

iii) $4x^3 - 7x + 3$ by   x-1

VIII – MATHS WORKSHEET

Construction of Quadrilaterals

1.   Construct a parallelogram ABCD, given that

     AB = 4 cm,   Ac = 6 cm   and   BD = 7 cm

2.   Construct a rhombus given that l_1 = 9 cm and l_2 = 6.8 cm

3.   Construct a square whose diagonal is 7 cm

4.   Construct a quadrilateral PQRS, given that PQ = 6.5 cm,   QR = 4 cm,
     $\angle Q = 90^0 = \angle S$ and $\angle R = 120^0$

5.   Construct an isosceles trapezium ABCD, AB ‖ DC, AB = 4.7 cm
     $\angle A = 120^0$ and AD = 4 cm

Compound Interest

1.   Find the compound interest on Rs. 12,000 for 2 years @ 5% p.a.,

     compounded annally.

2.   Find the simple interest and the compound interest on Rs. 5000 at the rate of 10% p.a.
     for   3 years.

3.   Find the amount and the compound interest if P = Rs. 5120,

     R = $12\frac{1}{2}$ % p.a. and Time = 3 years.

4.   The population of a village in 20,000 if the rate of growth of the population is 9%
     p.a. find the population after 2 years.

5.   The bacteria in a petridish grow @ 5% per hour. If the count of the
     bacteria now is 8000, how much will it be after 3 hours ?

ANSWERS :

1.   Rs. 1230   2 Rs. 1500,   Rs. 1655

3.   Rs. 7290 ,   Rs. 2170   4. 23762   5. 9261

Direct and Inverse Variation

1.   The bus fare for 112 km is Rs. 728. How much will be the fare
     for 240 km ?

2.   A group of 7 people had enough food for a month. A few more people joined them
     and the food lasted only for 21 days. How many people joined?

3.   A car travels 132 km on 11 litres of petrol. How far will it travel in
      16.5 litres of petrol ?

4.   A car travelling at a speed of 60 km/h can cover a certain distance in
      2 hours 20 minutes. If the speed was 10km/h more, how long would it
      take to cover the same distance ?

5.   Radhika types 270 words in 15 minutes. How many words would she
      type in 40 minutes ?

6.   A tap fills a tank in 3 hours and another tap can fill it in 6 hours. If both taps are
      opened together, how long will it take to fill the tank ?

7.   Convert : i) 90 km/h into m/sec   ii) 15 m/sec into   km/h

ANSWERS :

   1.   Rs. 1560   2. 3 people   3. 198 km   4. 2 hours

   5.   720 words   6. 2 hours   7. i) 25 m/sec   ii) 54 km/h

VIII – MATHS WORKSHEET

Volumes and Surface Areas

(Note : $1000 \ cm^3 = 1l$, $1m^3 = 1 \ kl$)

1.   Find the length of the edge of a cube whose S.A. is 864 cm^2.

2.   The ratio of the volumes of two cubes is 8 : 27. Find the ratio of their surface areas.

3.   Find the area covered by a Road-roller of width 80 cm, diameter 140 cm,   in 40 revolutions.

4.   The volume of cube is 343 cm^3. Find its T.S.A.

5.   How many buckets of capacity 15 litre can be filled from a tank 4m long,   2m broad,   1.2 m high, full of water ?

6.   A cylindrical tin of height 20 cm and base-radius 14 cm is open at the top. Find the cost of painting it from inside at the rate of 5 paise per sq.cm.

7.   A cubic tank with length of edge as 2m is full of water. A family of 4 needs 1000 litres of water per day. For how long will the water in the tank last ?

8.   A solid cylinder has t.s.a. 462 cm^2. Its c.s.a. is one- third of its t.s.a. Find its volume.

9.   The four walls and the floor of a swimming pool are to be painted @ Rs. 12 per m^2. If the length of the pool is 16m, breadth is 10m and depth is 4m, find the cost of painting.

10.   The dimensions of a cuboid are 25cm and 16 cm. Find the length of a cube (edge of the cube) Which has the same volume as this cuboid.

ANSWERS :

1. 12 cm   2. 4 : 9   3. 140.8 m^2 4. 294 cm^2 5. 640

6. 8 days   7. R = 7 cm, h $=\dfrac{7}{2}$ cm,   Vol = 539 cm^3

9. Rs. 4416   10.   20 cm

VIII – MATHS WORKSHEET

Data Handling

1. What is the probability that a number selected from the numbers 1, 2, 3, …………, 25 is a prime number , when each of the given numbers is equally likely to selected .

2. Tickets numbered from 1 to 20 are mixed up together and then a ticket is drown at random. What is the probability that the ticket has a number which is a multiple of 3 or 7.

3. 17 cards numbered 1,2,3 …… 17 are put in a box and mixed thoroughly . One person draws a card from the box. Find the probability that the number on the card is

    (a) odd   (b) a prime   (c) divisible by 3   (d) divisible by 3 and 2 both

4. A bag contains 5 red balls , 8 white balls, 4 green balls and 7 black balls. If one ball is drawn at random. Find the probability that it is

    (a) Black   (b) red   (c) not green

5. A child has a block in the shape of a cube with one letter written on each face as shown below.

A	B	C	D	E	A

    The cube is thrown once. What is the probability of getting (i) A (ii) D

6. A letter is chosen at random from the letters of the word ASSASSINATION. Find the probability that the letter chosen is a

    (i) vowel   (ii) consonant

7. The number of members in 20 families of a township are 6, 8, 4, 3, 5, 6, 7, 4, 3, 4, 5, 6, 4, 5 , 4, 3, 3, 6, 4 and 3. Prepare a frequency distribution table for the data and answer the following questions :

(i) What is the smallest family size ? How many families are of this size ?

(ii) What is the largest family size ? How many are of this size ?

(iii) What is the most common family size ?

8. The heights of 10 girls were measured in cm and the results were as follows :

   143, 148, 135, 150, 128, 139, 149, 146, 151, 132

   (i) What is the height of the tallest girl?
   (ii)   What is the height of the shortest girl ?
   (iii)   What is the range of the data ?
   (iv)   Find the mean height.
   (v)   How many girls are there whose heights are less than the mean height ?

9. The following data give the pocket expenses of 100 students of a school

VIII – MATHS WORKSHEET

Weekly pocket expenses (in rupees)	30	35	45	50	55	60	65
Number of students	6	10	14	22	35	9	4

Prepare a grouped frequency distribution of class intervals of equal width, taking one of the class intervals as 30 – 40

10. The following distribution table shows the performance of 270 candidates appearing for Army Education Corps intelligence test.

I.Q	$55-69$	$69-83$	$83-97$	$97-111$	$111-125$
No. of candidates	20	50	75	75	50

Draw a histogram for this distribution.

Answers :

1. $\dfrac{9}{25}$

2. $\dfrac{2}{5}$

3. $\dfrac{9}{17}, \dfrac{7}{17}, \dfrac{5}{17}, \dfrac{2}{17}$

4. $\dfrac{7}{24}, \dfrac{5}{24}, \dfrac{5}{6}$

5. $\dfrac{1}{3}, \dfrac{1}{6}$

6. $\dfrac{6}{13}, \dfrac{7}{13}$

VIII – MATHS WORKSHEET

Data Handling & Graphs

1. Draw a bar graph to represent Ajay's score, out of 100, in five subjects
    in an examination. Subject English, Hindi, Maths, Science, Social St.
    Marks : 78, 72, 96, 88, 80 respectively.

2.   The population of 40 villages (in thousands) is given below :
    6, 12, 8, 9, 14, 4,   4, 3, 6, 10, 9, 16, 4, 5, 7, 8, 11, 16, 20, 17, 3,
    8, 10, 12, 7, 6, 4, 9, 12, 11, 15, 17, 13, 12, 22, 6, 12, 5, 9, 13.
    Construct a frequency distribution table using class intervals 0-5,
    5-10, --------

3. Draw a Histogram to represent the above data.

4. Plot the following points on a Cartesian System.
    A (-3, 2),   B(2, -5),   C(0, 7),   D(-4, -6),   E(-5, 0),
    F(0, -4),   P(6, 0),   O(0, 0)   M(3, 7),   N(5, -2),
    Q(7, 3),   R(-5, 7)

VIII – MATHS WORKSHEET

Rational Numbers

1. Using appropriate properties find:

(a) $\left[-\dfrac{2}{3} \times \dfrac{3}{5} + \dfrac{5}{2} - \dfrac{3}{5}\right] =$

(b) $\dfrac{2}{5} \times \left[\dfrac{-3}{7} + \left(\dfrac{-1}{6}\right)\right] =$

2. Write the additive inverse of each of the following :

(a) $\dfrac{2}{8}$ (b) $\dfrac{-5}{9}$ (c) $\dfrac{-6}{-5}$ (d) $\dfrac{2}{-9}$ (e) $\dfrac{19}{-6}$

3. Verify that $(-x) = x$ for

(a) $x = \dfrac{11}{15}$ (b) $x = \dfrac{-13}{17}$

4. Find the multiplicative inverse of the following :

(a) -13 (b) $\dfrac{-13}{19}$ (c) $\dfrac{1}{5}$ (d) $\dfrac{-5}{8} \times \dfrac{-3}{7}$ (e) $-1 \times \dfrac{-2}{5}$ (f) -1

5. Name the property under multiplication used in each of the following :

(a) $\dfrac{-4}{5} \times 1 = 1 \times \dfrac{-4}{5}$

5. Name the property under multiplication used in each of the following:

(a) $\dfrac{-4}{5} \times 1 = 1 \times \dfrac{-4}{5} = \dfrac{-4}{5}$ (b) $\dfrac{-13}{17} \times \dfrac{-2}{7} = \dfrac{-2}{7} \times \dfrac{-13}{17}$

(c) $\dfrac{-19}{29} \times \dfrac{29}{-19} = 1$

6. Multiply $\dfrac{6}{13}$ by the reciprocal of $\dfrac{-7}{16}$

7. Tell what property allows you to compute $\dfrac{1}{3} \times \left[6 \times \dfrac{4}{3}\right]$ as $\left[\dfrac{1}{3} \times 6\right] \times \dfrac{4}{3}$

8. Is $\dfrac{8}{9}$ the multiplicative inverse of $-1\left[\dfrac{1}{8}\right]$? Why or why not?

9. Is 0.3 the multiplicative inverse of $3\frac{1}{3}$ Why or why not?

10. Write:

    (a)The rational number that does not have a reciprocal.

    (b)The rational numbers those which are equal to their reciprocals.

    (c)The rational number that is equal to its negative.

11. Fill in the blanks:

    (a)Zero has_____ reciprocal.

    (b)The numbers_____ and _____ are their own reciprocals.

    (c)The reciprocal of -5 is_____

    (d)Reciprocal of $1/x$, where $x \neq 0$ is_____

    (e)The product of two rational number is always a_____

    (f)The reciprocal of a positive rational number is_____

12. Represent these numbers on a number line:

    (a) $\dfrac{7}{4}$ (b) $\dfrac{-5}{6}$

13. Represent $\dfrac{-2}{11}, \dfrac{-5}{11}, \dfrac{-9}{11}$ on the number line.

14. Write five rational numbers which are smaller than 2.

15. Find ten rational numbers between $\dfrac{-2}{5}$ and $\dfrac{1}{2}$

16. Find five rational numbers between:

    (a) $\dfrac{2}{3}$ and $\dfrac{4}{5}$ (b) $\dfrac{-3}{2}$ and $\dfrac{5}{3}$ (c) $\dfrac{1}{4}$ and $\dfrac{1}{2}$

17. Write five rational numbers greater than -2

18. Find ten rational numbers between $\dfrac{3}{5}$ and $\dfrac{3}{4}$

19. Find $\dfrac{3}{7} + \left[\dfrac{-6}{11}\right] + \left[\dfrac{-8}{21}\right] + \dfrac{5}{22}$

20. Find $\dfrac{-4}{5} \times \dfrac{3}{7} \times \dfrac{15}{16} \times \left[\dfrac{-14}{9}\right]$

21. Write the additive inverse of the following:

(a) $\dfrac{-7}{19}$ (b) $\dfrac{21}{112}$

22. Verify that $-(-x)$ is the same as x for:

(a) $x = \dfrac{13}{7}$ (b) $x = \dfrac{-21}{31}$

23. Find $\dfrac{2}{5} - \dfrac{3}{7} - \dfrac{1}{14} - \dfrac{3}{7} \times \dfrac{3}{5}$

24. Write any three rational numbers between –2 and 0

25. Find any ten rational numbers between $\dfrac{-5}{6}$ and $\dfrac{5}{8}$

26. Find a rational number between $\dfrac{1}{4}$ and $\dfrac{1}{2}$

27. Find three rational numbers between $\dfrac{1}{4}$ and $\dfrac{1}{2}$

VIII – MATHS WORKSHEET

Percentage and its Application

Solve the following equations:

1.   Find :

  (a)ratio of 8m to 16 Km.

  (b) Speed of car which is 20m/sec to speed of our which is 72Km/hr.

2.   Express as fraction :

  (a) 4%

  (b)56%

  (c)0.08%

3.   Convert the following ratios as percentage

  (a)$\frac{27}{4}$

  (b)$\frac{23}{36}$

  (c)0.004

4.   70% of students in a school are boys and the number of girls in the school is 504. Find the number of boys.

5. The enrollment in a school increases from 1200 to 1254. Determine the percent increase in student enrollment.

6. If 60% of students in a school are boys and total number of girls in the school is 460. Find the number of boys in the school.

7. The annual rate of growth of population of a certain city is 8%. If its present population is 196830, what was the population year ago.

8. Jasmine spends 40% of her salary on food, 25%on house rent, 15% on entertainment and 5% on conveyance. Her savings at the end of the month is Rs. 1200. Find the salary per month.

9. A man buys an article for Rs. 240 and sells it for Rs. 288. Find his gain percent.

10. A radio purchased for Rs.1200 and sold for Rs.1080. Find the loss percent.

11. By selling mathematics book for Rs. 486 a publisher earns a profit of 35%. How much did it cost for the publisher.

12. By selling a silver necklace for Rs. 657 a jeweler loss $8\frac{3}{4}$ % for how much did he purchase it.

13. By selling 288 hens, A woman lost selling price of 12 hens. Find her loss%

14. Amal sells 2 laptop for Rs. 19550 each gaining 15% on one and losing 15% on the other find her gain or loss% in the whole transaction.

15. Nimra purchased two bags for Rs.750 each. She sold their bags gaining 6% on one bag and losing 4% on the other. Find her loss or gain% in the whole transaction.

16. Find CP (a)when SP=Rs 297.50 gain $= 16\frac{2}{3}$%

   (b)SP=Rs 34.40 gain $= 7\frac{1}{2}$%

   (c) SP=Rs 2431 loss $= 6\frac{1}{2}$ %

17. Find SP when (a)CP= Rs.875 loss = 12%

   (b)CP= RS 840 gain $= 16\frac{2}{3}$%

18. Muzammil bought an iron safe for Rs. 5580 and paid Rs. 170 for transportation. Then he sold it for Rs. 6440. Find the gain percent.

19. CP of 12 candles is equal to SP of 15 candles. Find loss%

20. By selling 125 cassettes a man gains an amount equal to the SP of 5 cassettes find gain percent.

21. A grocer bought sugar worth Rs . 4500 . He sold $\frac{1}{3}$ of it at a gain of 10%. At which gain percent must be remaining sugar to be sold to have a gain of 12% on the whole.

22. Danish sold a watch to Girish at a gain of 12% and Girish had to sell it to Jeenish at a loss of 5% . If Jeenish paid Rs. 1330 for it how much did Danish pay for the watch.

23.The MP of a water cooler is Rs. 4650. The shopkeeper offers a discount of 18%. Find its SP.

24.The price of a sweater was slashed from Rs. 960 to Rs. 816 by a shopkeeper in the winter season. Find the rate of discount given by him.

25. Find M if(a)SP= Rs. 528 Discount is 12%

 (b)Find SP if MP is RS. 1250 discount is 6%.

Answers :

1. a)$\frac{1}{1200}$ 2. a)$\frac{1}{25}$ b)$\frac{14}{25}$ c)$\frac{1}{1250}$

2. a)675 %   b)$63\frac{8}{9}$ c)0.4%

4. 1176   5. 4.5%   6. 690

5. Rs. 8000   9.20%   10. 10%

11. 4%   12.Rs. 360   13.720

14.Loss $2\frac{1}{4}$%   CP=17000   Loss = 900   CP=2300

15. Gain = 1%   SP = 795   Gain = 15   CP=720

16.a)255   b)Rs. 32   c)Rs.2600

17.a)Rs. 770   b)980   18)12%   19)20%

20)$4\frac{1}{6}$%   21)13%   22)1250   23)3813

24)15%   25)a)600   b)1175

VIII – MATHS WORKSHEET

Linear Equations

1.   Solve for x :

  i. $4x - 7 - (x+4) = 3x + 4 - (2x - 1)$

  ii. $\dfrac{17 (2 - x) - 5 (x + 12)}{1 - 7x} = 8$

2.   The sum of three consecutive even numbers is 30. Find the numbers.

3.   The sum of three consecutive odd numbers is 63. Find the numbers.

4.   The sum of two twin primes is 60. Find the two prime numbers.

5.   The measures of the angles of a triangle are in the ratio 1 : 2 : 3. Find the angles.

6.   The numerator of a fraction is 3 less than its denominator. If we add 1 to both numerator and denominator, it becomes equal to   . Find the fraction.

7.   Renu's mother is four times as old as Renu. After 5 years her mother will be three times as old as she will then be. Find their present ages.

8.   The sum of four consecutive multiples of 7 is 70. Find these multiples.

9.   The sum of two numbers is 50. If the larger number is divided by the smaller number we get   . Find the numbers.

10.   The perimeter of a triangle is 49 cm. One side is 7cm longer than another side and 5cm shorter than the third side.   Find the sides.

11.   In a quadrilateral ABCD, $\angle$ A = $(2x + 4)^0$, $\angle$ B = $(2x - 13)^0$,

  $\angle$C = $(3x + 11)^0$ and $\angle$D = $(4x - 5)^0$. Find the measures of the angles.

12.   Half of the number of boys of Class 8 B went to the football ground to play.

     One-fourth of the number of boys went to the Library to take books. Remaining 10 boys went to the 3rd Language room.   Find the number of boys of Class 8 B.

13.   In $\triangle$ABC, $\angle$ A = $\angle$ C and $\angle$ B = $\angle$ A + $\angle$ C. Find the measures of the angles of the triangle.

VIII – MATHS WORKSHEET

Rational Numbers

I. Fill in the blanks

1. _____ has no reciprocal.
2. There are _____ numbers of a rational numbers between any two numbers.
3. The product of a number and its multiplicative inverse is _____.
4. Sum of a number and its negative is _____.
5. _____ is the multiplicative identity.
6. _____ is the additive identity.
7. Additive inverse of $\underline{3}$ is _____ 7
8. Multiplicative inverse of -2 is _____.
9. The numbers _____ and _____ are their own reciprocals.

II. Find the value of the following:-

i) $\dfrac{-21}{25} \times \dfrac{15}{-49} \times \dfrac{-35}{9}$

ii) $\dfrac{-43}{45} \times \left(\dfrac{-8}{5} + \dfrac{3}{5}\right)$

iii) $\dfrac{-21}{15} + \dfrac{7}{25} - \left(\dfrac{-4}{25}\right)$

iv) $\dfrac{-72}{45} \Big/ \dfrac{32}{25}$

III. Verify $-(-x) = x$ by taking $\dfrac{-2}{5}$.

IV. Represent $\dfrac{-3}{7}$ and $\dfrac{9}{7}$ on a number line.

V. State the property used in the following :-

i) $\dfrac{-3}{58} \times \dfrac{7}{8} = \dfrac{7}{8} \times \dfrac{-3}{5}$

ii) $\left(\dfrac{-2}{3} + \dfrac{5}{7}\right) + \left(\dfrac{3}{5}\right) = \dfrac{-2}{3} + \left(\dfrac{5}{7} + \dfrac{3}{5}\right)$

iii) $\dfrac{-7}{9}\left(\dfrac{3}{25} + \dfrac{2}{7}\right) = \dfrac{-7}{9} \times \dfrac{3}{25} + \dfrac{-7}{9} \times \dfrac{2}{7}$

iv) $\dfrac{-5}{19} + \dfrac{3}{57} = \dfrac{3}{57} + \dfrac{-5}{19}$

v) $\dfrac{-37}{49} \times \dfrac{49}{-37} = 1$

VI. Using suitable Property evaluate the following.

i) $\dfrac{-3}{5} \times \dfrac{7}{9} + \dfrac{2}{5} \times \dfrac{7}{9}$

ii) $\dfrac{-14}{24} \times \dfrac{-13}{14} + \dfrac{14}{25} \times \dfrac{-1}{14}$

iii) $\dfrac{3}{} \times \dfrac{-2}{} + \dfrac{3}{}x\dfrac{-3}{}$

iv) $\dfrac{2}{} \times \dfrac{-3}{} + \dfrac{-7}{} - \dfrac{2}{}x\dfrac{10}{}$

VIII – MATHS WORKSHEET

7   5 7   5   21 13 9   21 13

VII.   Find Five rational numbers between

    i)   0 and 1   ii) $\underline{1}$ and $\underline{1}$ iii) $\underline{-1}$ and $\underline{1}$

                                  3   2   3   4

ANSWER KEY

II) i) -1

ii) $\underline{-43}$ iii) $\underline{24}$ iv) $\underline{-5}$
**   45   25   4**

V) i) Commutative property of multiplication

ii) Associative property of addition

iii) Distributive property of multiplication over addition

iv) Commutative property of addition

VI.

i) $\underline{-7}$ ii) $\underline{14}$ iii) $\underline{-3}$ iv) $\underline{-165}$
**   45   25   7   187**

Linear Equations in One Variable

Solve the following equations:

1) $x = \frac{4}{5}(x + 10)$

2) $\frac{2x}{3} + 1 = \frac{7x}{15} + 3$

3) $x + 7 - \frac{8x}{3} = \frac{17}{6} - \frac{5x}{2}$

4) $m - \frac{m-1}{2} = 1 - \frac{m-2}{4}$

5) $\frac{3t-2}{4} - \frac{2t+3}{3} = \frac{5}{6} - t$

6) $\frac{5x-3}{3x+5} = \frac{3}{5}$

7) $\frac{x}{3} + \frac{4}{3} = \frac{2}{3}(4x - 1) - \left[2x - \frac{x+1}{3}\right]$

8) $\frac{17-3x}{5} - \frac{4x+2}{3} = 5 - 6x + \frac{7x+14}{3}$

9) $(5x - 1)(x + 3) - (x - 5)(5x + 1) = 40$

10) $\frac{y-(7-8y)}{9y-(3+4y)} = \frac{2}{3}$

2. The sum of four consecutive odd numbers is 368. Find its numbers

3. A number consisting of two digits becomes $\frac{5}{6}$ of itself, if its digits are interchanged. If the difference of the digits is 1, find the number.

4. 5 years ago, father's age was 7 times the age of his son. 5 years later, the father's age will be 3 times the age of his son. Find their present ages.

5. One number is 4 times the other number. If 6 is added to the smaller number and 4 is added to the larger number, then the later number becomes twice the other number. Find the numbers.

6. Angle C of a triangle ABC is the sum of the other two angles A and B. If the ratio of $< A$ and $< B$ is $3:2$, find the measure of all the three angles.

7. A number is as much greater than 31 as is less than 81. Find the number.

8. A number consists of two digits whose sum is 5. If we add 9 with the number, the digits in the number are interchanged.

9. 10 years ago, a man's age was 6 times the age of his son. 12 years later, the age of the son will be 27 years. What is the present age of the father ?

10. The perimeter of a rectangle is 9 times its breadth. If its length is 3cm more than twice its breadth, find the dimensions of the rectangle.

11. The ages(in years) of Ram and Shyam are in the ratio 5:7. If Ram is 9 years older and Shyam is 9 years younger. The age of Ram would have been twice the age of Shyam. Find their ages.

Answers :

1)40   2)10   3)$\frac{-25}{3}$ 4)$\frac{4}{3}$ 5)$\frac{28}{13}$

6)$\frac{15}{8}$ 7)$\frac{5}{2}$ 8) 4   9)1   10)$\frac{15}{17}$

2. 89,91,93,95   3.54   4.40yrs,10yrs   5.4, 16

6. 54^0, 36^0, 90^0 7. 56   8.23   9. 40 yrs   10. 2cm, 7cm

11. 15yrs, 21yrs

VIII – MATHS WORKSHEET

Data Handling

1) The table given below shows the marks scored by 80 students (out of 50) in a test. Draw a histogram to represent this data.

Marks	No. of students
0-10	3
10-20	14
20-30	24
30-40	27
40-50	12

2) The following table shows the height of some students. Show their information in the form of histogram.

Height in cm	125-130	130-135	135-140	140-145	145-150	150-155
No. of students	4	8	18	22	12	8

3) The following shows the pulse rate of grouping 50 people represent it on a histogram.

Pulse rate beat	60-65	65-70	70-75	75-80	80-85
No. of people	4	12	20	10	4

4) Plot the following points on a Cartesian plane.
   A(2,2) ; B(6,6) ; C(-3,0) ; D(0,-4) ; E(-3,-9) ; F(-7,2) ; G(8,-3) ; H(0,0)

5) On which axis will the following points lie?
   A(0,6) ; B(0,8) ; C(3,0) ; D(5,0) ; E(0,-12) ; F(-9,0)

Construction of Quadrilaterals

1) Construct a quadrilateral ABCD where AB=7.2cm, BC=6.5cm, CD=5.9cm, AD=6.1cm, and AC=8.4cm.
2) Construct a quadrilateral HIGH where HI=5.4cm, IG=2.6cm, GH=4cm, HG=6.7cm and IH=5cm.

3) Construct a quadrilateral HOPE where HO=6cm, OP=5.5cm, PE=4.9cm, HE=6.6cm and $<A=120^0$.

4) Construct a quadrilateral FINE where FI =3.8cm, IN=3.4cm, NE=4.2cm and $<I=75^0$

5) Construct a quadrilateral MNOP where MN=3.8cm, NO=5.6cm, OP=5.9cm, $<N=105^0$ and $<O=60^0$.

6) Construct a quadrilateral ABCD where AB=4.2cm, BC=3.7cm, CD=4.9cm, $<B=35^0$ and $<C=145^0$.

7) Construct a quadrilateral MNOP where MN=4.8cm, NO=5.2cm, OP=6cm, $<O=120^0$ and $<P=65^0$.

8) Construct a quadrilateral ABCD where AB=5.2cm, BC=6cm, $<A=120^0$, $<B=105^0$ and $<C=75^0$.

9) Construct a parallelogram ABCD with sides 6cm and 4cm and angle75^0.

10) Construct a parallelogram with sides 5.6 and 7.1cm and one of the diagonal is 8.4cm.

11) Construct a rhombus PQRS with sides 5.5cm and a diagonal 7.8cm.

12) Construct a square MNOP where the diagonals are 8 cm,

13) Construct a square with sides 5.8cm.

14) Construct a rectangle with sides 5.2cm and 4.8cm.

15) Construct a rectangle with a diagonal 5.4cm and the angle between the diagonals is 75^0.

Direct and Inverse Variations

1) The cost of 18 notebooks is Rs 423.Find the cost of 20 notebooks.

2) 24 oranges can be packed in 4 cartons. How many oranges can be packed in 12 cartons?

3) Check whether the given quantities are in proportion or not:
   a)11,22,17 and 36   b)12,24,36 and 48

4) Two quantities x and y vary directly. Complete the table.

x	6	8				18		24
y	12	16	18	24	32		40	

5) If 18 books cost RS 1170 how much will 25 books cost?

6) A car travels 286 km on 26 liters of petrol. How far will it travel on 36 liters?

7) A map is drawn to a scale of 1cm: 1000km.If the distance on the map between 2 cities is 5cm.What is the actual distance between them?

8) The S.I on a certain sum is RS 300 for 2yrs.Find the S.I on the same sum for 6yrs at the same rate.

9) Check whether x and y vary inversely or not.

x	2	12	60	4	5	7.5	3
y	30	5	1	15	12	8	20

x	7	4	3	5	21	6	9
y	6	8	14	16	2	7	5

10) Complete the table if x and y vary inversely.

x	3	6		5	1.5	10
y	10	5	2			

11) A family of 16 had enough food to last them for 20 days. If 4 guests arrived suddenly, for how long will the amount of food last? (16 days)

12) 26 men can do a piece of work in 18 days. If the work is to be completed in 13 days, how many more men need to be hired? (36-26=10)

13) At the speed of 18km/hr a cyclist covers a distance in 190 minutes. At what speed can he cover the same distance in 3hrs. (19km/hr)

14) If 30 men can do a piece of work in 15 days , in how many days will 25 men do it?(18 days)

15) A car with the speed of 60km/hr completes a journey in 3hrs. If the journey can be completed in 4 hrs, what can be the speed of the car? (48km/hr)

16) Raheema completes a certain work in 5 days and Fouzia completes the same in 7 days. If they both work together, how long will they take to complete the same work? (2 11/12 days)

17) Sahrish and Shaistha together can weave a carpet in 4 days. If Shaistha works alone she can weave the carpet in 6days. How long will Sahr take to weave the carpet if she works alone? (12 days)

18) If Sham Ram and Tom , work together they can mow a lawn in   4hrs.If Sham work by himself he takes 10hrs and Ram working by himself takes 12hrs . How long will Tom take to mow the same lawn, if he works by himself?

19) A tap fills a tank in 3hrs and another tap can fill it in 6hrs. If both taps are opened together how long will it take for the tank to be filled? (2hrs)

20) A tap fill a tank in 5hrs and the outlet pipe empties it in 6hrs. When the tap was opened the outlet was not blocked so the water was also flowing out. How long will it take for the tank to be completely filled? (30hrs)

21) Express

   a)36km/hr to m/sec   b)40m/hr to km/hr

   c)90km/hr to m/sec   d)20m/sec to km/hr

22) A car travels 54km in 45 minutes. Express its speed in m/sec.

23) A car is traveling at a speed of 55km/hr.How far will it travel in 2 hrs and12 minutes.

24) Mina cycles to her school 14 km away and takes 56 minutes to reach.

   Find her speed

25) A bus leaves from Chennai and reaches Madurai which is 440 km away in 6hrs 30 minutes. Find its speed.

Compound Interest

26) Find simple interest for RS 3000 and rate 5% for 2 yrs.

27) Find the compound interest and amount for the following:

   a) P=Rs200, 000   R=8%   T=3yrs

   b) P=Rs18000   R=4%   T=2yrs

   c) P=Rs8000   R=20 paise per rupee per annum   n=4yrs

   d) P=Rs2000   R=10 paise per rupee per annum   n=2yrs

28) Find the difference between SI and CI on Rs 10,000 for 2yrs at the rate of 5% p.a.

   (1000, 10.25)

29) In how much time will RS 4000 amount to RS 5200 with SI at the rate of 10% with

   the same time period and rate, find the CI on the same principal. (1324)

30) Find the SI and CI on RS70000 for 3yrs at the rate of 10%. (21000)

31) What sum of money will amount to RS 12100 in 2yrs time at the rate of 10% p.a.

   (10,000)

32) Find CI on RS 12000 for 2yrs at the rate of 5% compounded annually. (13230, 1230)

Multiplication and Division of Algebra Expression

33) Find the HCF of the following:

   a)-$50a^2b^2c^2$; $5a^2b$; $20abc^2$

   b) $10m^3n^2$; -$5m^2n^2$; $20m^2n$

   c) $28g^3h^2$;-$7g^3$; $14g^2h$

   d)$19abc^2$; $95a^2$; $57abc^2$

34) Factorize

   a) $24p^3q^2 - 18p^2q$

   b) $26m^4n^3 + 39m^3n^2$

   c) $x^2 - 4x + 3xy$

   d) $12x^3y - 16y^2 + 8x^2y$

   e) $a^2b + bd + ab^2 + ad$

   f) $m^2 + 3mn - 15n - 5m$

   g) $2y^2 + 3x + xy + 6y$

   h) $81m^2 - 64n^2$

   i) $25^2 - 1$

   j) $b^2 - 49$

   k) $x^2 + 4xy + 4y^2$

   l) $4x^2 + 12xy + 9y$

   m) $a^2 - 36a + 99$

n) $x^2+12x+36$

o) $25x^2-30xy+9y^2$

p) a^2-25

35) Find the quotient and reminder

a) $a^2+79+12 / a+b$

b) $m2-m+42 / m+6$

c) $-24x^3-31x^2+71x-21 / 3-8x$

d) x^5-9x / x^2-3

e) $a^5+a^4+a^3+a^2+a+1 / a^3+1$

Understanding Quadrilaterals

1) The sum of the angles of a polygon with n – sides is _____.
2) The external angle of a regular polygon is 20^0. How many sides does it have ? What is the measure of each interior angle. What is the total measure of its angles.
3) Is it possible to have a regular polygon with measure of each exterior angle as 58^0 ? Why ? can it be an int.angle of a regular polygon ?
4) Find the measure of each exterior angle of a
   (i) Regular octagon   (ii) Regular Decagon
5) Find the perimeter of a parallelogram with sides 9cm and 5cm.
6) Find the perimeter of a rhombus whose diagonals are 16cm and 12cm
7) The adjacent angles of a parallelogram are in the ratio 5:4 . Find all the angles.
8) If one of the angles of a parallelogram is a right angle, Prove that it is a rectangle.
9) If all the angles of a parallelogram are equal. Prove that it is a rectangle.
10) Find the length of the diagonal of a rectangle whose length is 15cm and breadth is 8cm.
11) A square is a convex polygon. Explain why ?
12) The measure of two adjacent angles of a quadrilateral are 110^0 and 50^0 and the other two acute angles are equal. Find the measure of each angle.
13) The five angles of a pentagon are in the ratio 5 : 6 : 7: 8 :10. Find all the angles.
14) GOAL is a quadrilateral in which GO||AL. If $< G = < O = 40^0$.

What are the measures of $< A \ and \ < L.$

VIII – MATHS WORKSHEET

15) ABCD is a parallelogram what specific name can be given to it if
the following additional facts are true ?

(i)   AB = AD   (ii) $\angle DAB = 90^0$ (iii) AB = AD and $\angle DAB = 90^0$

16) Find the values of x and y in each case.

(i) TERM is a parallelogram

M ——————— R

3x-10   5x+30

T   E
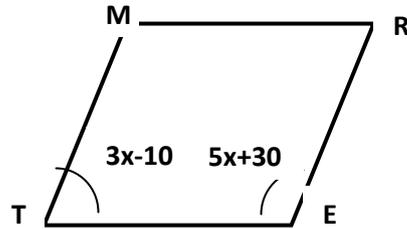
ii) MINT is a rectangle

M   I

O

T   N
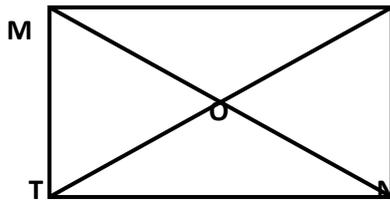
OM = 5x + 2

OI = 17

Find MN also.

iii) ABCD is a rhombus

A

26cm

D   x   B

C

AB = 26cm

AC = 48cm

(iv)

90^0

150^0

x

x   x

30^0 30^0
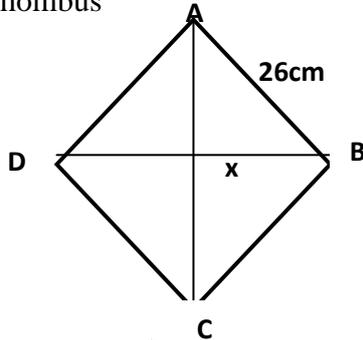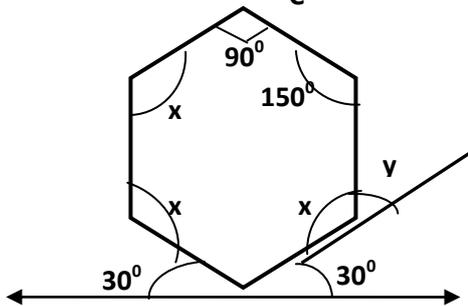
(v) PQRS is a parallelogram (find z also)

P   Q

50^0

x

z+7

20cm

o

y

S   R

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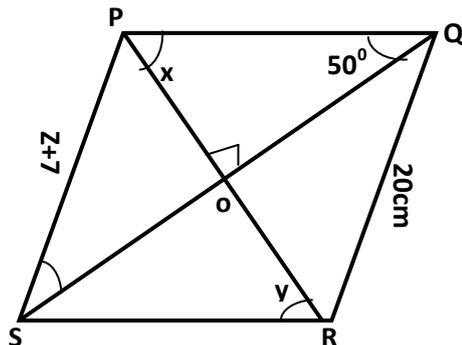
VIII – MATHS WORKSHEET

vi) PLAN is a isosceles trapezium in which PL|| NA (find z also)
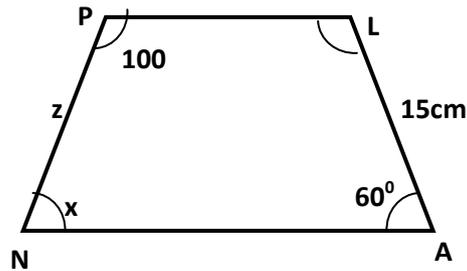
17. What you will call a rhombus in which one angle is 90^0.

Answers :

1. $(n-2) \times 180$
2. 18, 160 , 2880
3. No, no
4. $45^0, 36^0$
5. 28cm
6. 40cm
7. $100^0, 80^0, 100^0, 80^0$

8 & 9) Hint : If all angles are 90, it is a rectangle.

10. 17 cm (use Pythagoras theorem)

12. 50, 50, 50, 110

13. 75^0 , 90, 105 , 120 & 150

14. 140, 140

15. (i) Rhombus   (ii) Rectangle   (iii) Square

16. (i) 20^0 (ii) x= 3 MN = 6cm   (iii) 10cm   (iv) 120^0

    (v) x= 40^0 y= 40^0 z= 13cm   (vi) x= 80^0, y = 120^0 z = 15cm

17. Square.

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VIII – MATHS WORKSHEET

Practical Geometry

1. Construct a quadrilateral ABCD in which AB = 4.4cm, BC = 4cm, CD = 6.4cm, DA = 2.8cm and BD = 6.6cm

2. Construct a parallelogram ABCD where AB = 3.6cm , BC = 4.2cm   and AC = 6.5cm.

3. Construct a rhombus with side 6cm and one diagonal 8cm. Measure the other diagonal.

4. Construct a quadrilateral ABCD in which AB = 5.5cm, AD = 4.4cm, CD = 6.5cm , AC = 6.5cm and BD = 7.1cm.

5. Construct a rhombus COLD in which CL = 7.5cm $\overline{OD}$ = 6cm

6. Construct a rectangle PURE in which PU = 5.5cm, UR = 4cm

7. Construct a parallelogram HARD in which HA = 7cm , AR = 5cm, $< D = 105^0$.

8. Construct a quadrilateral BIRD where BI = 3.5cm , IR = 6.5cm, $< B = 75^0$, $< I = 105^0$ and $< R = 120^0$

9. Construct a quadrilateral PQRS, in which $< Q = 45^0, < R = 90^0$, QR = 5cm, PQ = 9cm and RS = 7cm.

10. Construct a kite SOLD if OD = 8cm, SD = 5cm and LD = 6cm . Which properties of the kite did you use in the process.

11. How will you construct a rectangle PLOT if you know only the lengths PL and LO?

12. Construct a square GOAT with GO = 4.9cm

13. Construct a rhombus in which the diagonals are 6.6cm and 4.8cm long.

14. Construct a square ABCD, given that diagonal AC = 6cm.

15. Construct a parallelogram CARE where CA = 3.9cm and AR = 5.5cm.

16. Construct a rectangle with adjacent lengths 3.5cm and 4.5cm

17. Construct a rhombus ABCD, with side AB = 7.3cm and $< A = 75^0$