14/07/25

Maths Worksheet.

1. Verify that $[-(-x)] = x$ for each of the following.
   a] $x = \frac{-2}{7}$

2. Verify the closure property of addition for the following rational numbers.
   a] $\frac{-4}{7}$ and $\frac{-2}{7}$

3. Verify that $a+b = b+a$ for each of the following.
   a] $a = \frac{-2}{9}$, $b = \frac{-4}{3}$

4. For each of the following, check that $a-b \neq b-a$.
   a] $a = \frac{-6}{7}$, $b = \frac{-3}{8}$

5. For $x = +\frac{9}{10}$ and $y = -\frac{5}{7}$, verify that $(-x)+(-y) = -(x+y)$.

6. If $x = \frac{3}{5}$, $y = \frac{17}{35}$, $z = \frac{4}{7}$, then check that
   $(x-y)-z \neq x-(y-z)$.

7. Find the multiplicative inverse of each of the following. a] $\frac{-4}{9} \times \frac{27}{28}$

8. Write the name of the property used in each of the following. a] $\left[\frac{7}{10} \times \frac{5}{14}\right] \times \frac{2}{9} = \frac{7}{10} \times \left[\frac{5}{14} \times \frac{2}{9}\right]$

   b] $\frac{3}{11} \times \frac{11}{15} = \frac{11}{15} \times \frac{3}{11}$

25. Simplify. a] $\left[\frac{2}{5}\right]^3 \div \left[\frac{2}{5}\right]^5$

26. Simplify the following and write the answer in exponential form.
a] $y^x \times x^x \times z^x$

27. Simplify. a] $(a^3 \times a^2)^2$ b] $\frac{4^3 \times a^5 \times b^3}{4^2 \times a^3 \times b^2}$

28. Verify the following. [Example 3: Pg 34]
a] $6^4 \div 6^{-2} = 6^{4-(-2)}$
b] $\left[\frac{-1}{4}\right]^{-3} \div \left(\frac{-1}{4}\right)^{-4} = \left[\frac{-1}{4}\right]^{-3+4}$

29. Verify the following. [Example 2: Pg 34]
a] $3^4 \times 3^{-2} = 3^{4+(-2)}$
b] $\left[\frac{-2}{5}\right]^{-4} \times \left[\frac{-2}{5}\right]^{-2} = \left[\frac{-2}{5}\right]^{-4+(-2)}$

30. [Example 4: Pg 35] Verify the following.
a] $\left[\left(\frac{1}{3}\right)^5\right]^{-2} = \left(\frac{1}{3}\right)^{5 \times (-2)}$
b] $(12^{-2})^{-3} = (12)^{(-2) \times (-3)}$

31. [Example 5: Pg 35] Verify the following.
a] $(2 \times 3)^{-3} = 2^{-3} \times 3^{-3}$.

32. Simplify and express in exponential form.
a] $\left[\frac{1}{3}\right]^{-2} \times \left[\frac{1}{3}\right]^{-3}$

33. Simplify and write the answer with positive exponents. a] $\left[\frac{25}{26}\right]^{-3} \div \left[\frac{25}{26}\right]^{-5}$

34. Evaluate. a] $\left[\left(\frac{1}{5}\right)^0 - \left(\frac{1}{8}\right)^0\right]^0 \times 7^0$

b] $(3^0 + 4^0 + 5^0) \div (a^0 + b^0)$

35. Simplify. a] $(11)^{-5} \times (3)^{-5}$

b] $\left[\frac{-4}{9}\right]^{-7} \times \left[\frac{-3}{8}\right]^{-7}$

36. Find the value. a] $(3^2 \times 2^{-2})(5^2 \div 5^2)$

b] $\left[\left(\frac{5}{15}\right)^{-2} \times \left(\frac{3}{5}\right)^{-2}\right] \div \left(\frac{2}{5}\right)^{-1}$

37. Find x. a] $\left[\left(\frac{7}{8}\right)^{-8} \times \left(\frac{7}{8}\right)^{3}\right] = \left(\frac{7}{8}\right)^{x}$

b] $\left[\left(\frac{4}{7}\right)^{-3} \times \left(\frac{16}{49}\right)^{-1}\right] = \left(\frac{4}{7}\right)^{x-1}$

38. [Example 7: Pg -208]

A coin is tossed 400 times and the following results are obtained.

Heads	183
Tails	217

Find the probability of obtaining (a) heads (b) tails.

17. Find four rational numbers between x and $|x|$, where $x = -\frac{2}{7}$.

18. Divide the sum of $\frac{4}{9}$ and $-\frac{5}{6}$ by the sum of $\frac{2}{5}$ and $\frac{4}{3}$.

19. In a class, $\frac{3}{5}$ of the total number of students are girls. If the number of boys is 24, then find the total strength of the class.

20. From a wire 10 m long, two pieces of lengths $\frac{13}{5}$ m and $\frac{33}{10}$ m are cut. What is the length of the remaining wire?

21. If $\frac{25}{3}$ kg of grapes are to be distributed among 5 children equally, how many grapes will the each child get?

22. Example 9: A train at a uniform speed covers a distance of 350 Km in $3\frac{1}{2}$ hours. Find the speed of the speed of the train and the distance covered in 5 hours.

23. Example 10: The length of a rectangular plot is $5\frac{1}{4}$ m and its breadth is $2\frac{1}{3}$ m. Find the perimeter and area of the plot.

24. Simplify and express the following in exponential form. a] $\left[\frac{-2}{3}\right]^3 \times \left[\frac{-2}{3}\right]^4$.

9. Verify the commutative property of multiplication for the following rational numbers.
   a] $\frac{13}{15}$ and 5.

10. For each of the following rational numbers, check that $x \div y \neq y \div x$.
   a] $x = 10, y = \frac{-20}{19}$

11. Verify the property, $x \times (y \times z) = (x \times y) \times z$, for each of the following.
   a] $x = \frac{-7}{8}, y = \frac{-4}{7}, z = \frac{7}{9}$

12. Verify the property, $x \times (y + z) = x \times y + x \times z$, for each of the following.
   a] $x = \frac{3}{11}, y = \frac{-11}{15}, z = \frac{2}{9}$

13. Use the distributive property of multiplication of rational numbers to find the value of the following. a] $\frac{-2}{3} \times \left[\frac{6}{7} - \frac{9}{10}\right]$

14. Smita takes $2\frac{1}{3}$ hours to complete one round of jogging in a park. How many hours will she take to complete 6 rounds of the park?

15. Find seven rational numbers between $\frac{-3}{11}$ and $\frac{-4}{11}$

16. Find five rational numbers between 9.3 and 9.5.

39. [Example 8: Pg 209] One card is drawn from a well-shuffled deck of 52 cards. What is the probability of the card being:
(a) a jack?
(b) an ace of red colour?

40. [Example 9: Pg 209] A bag contains 8 yellow balls, 9 white balls, 5 green balls, and 2 red balls. One ball is drawn after mixing the bag well. What is the probability of the drawn ball being:
a] red? b] green?
c] yellow? d] White?

41. [Example 10: 209] Fifteen cards are numbered from 1 to 15. They are mixed and kept in a bag. A card is drawn from the bag at random. What is the probability of:

a] the card having a number divisible by 3?
b] the card having a number divisible by 4?
c] the card having an even number divisible by 3?

42. A bag has 12 red marbles, 20 green marbles, and 18 yellow marbles. Find the probability of selecting a non-green marble.

43. Find the probability of getting an ace when a card is randomly selected from a pack of 52 cards.

44. Two dice are rolled simultaneously. Find the probability of a] getting a sum of 5.
b] getting a number such that one is the double of the other.

45. Out of 20 matches played by a team, 12 are won and 3 are drawn. Find the probability of the matches lost.

46. Write down the ordinate of each of the following points. a] (2, -3)

47. Determine the quadrants (without actually plotting the points) in which the following points lie.
a] B(6, -4).

48. Plot the following points on a graph paper.
b] M(-2, 4) a] P(4, -3)

49. Plot the given points on a graph paper and join them. Shade and name the figure.
A(-2, 3), B(3, 1), C(0, -2), D(4, -4).

50. Check if the given points are collinear.
S(-2, 3), L(1, 10), M(-1, 2), N(-3, 2).

51. Draw a hexagon with the following coordinates
A(-3, 0), B(0, -2), C(3, 0), D(3, 3), E(0, 4), F(-3, 3).

52. Draw a square with vertices.
P(-5, 0), Q(-5, 3), R(0, 3), and S(0, 0).

53. Perimeter - Side graph of a Square.

54. Area - Side graph of a Square.

55. Plotting a graph of different multiples of numbers.

56. Draw a linear graph for the given data.

a]

,	3	3	3	3	3
,	0	1	2	3	4

b]

,	0	-1	-2	-3	-4
,	0	-1	-2	-3	-4

57. A bank is giving interest on the principle at certain rates and fixed time as follows. Draw a linear graph to represent the given information.

Principal (in ₹)	100	200	300	400	500
Interest (in ₹)	10	20	30	40	50

58. Draw the temperature - time graph of two liquids. A and B, based on the given information.

Time in Minutes	Temperature of liquides A	Temperature of liquide B
5	10°C	12°C
10	15°C	15°C
15	20°C	18°C
20	25°C	21°C
25	30°C	24°C
30	35°C	27°C