Maths ①

Worksheet.

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class - VII

Sec-D/B

[redacted] - Worksheet.

School NO - 5602.

Maths

Worksheet ②

1. Sum of two integers = 28
One of integers = -45.
= -45
= 28 - (-45).
By Further Calculation.
= 28 + 45
= 73.

2. Percentage increase: $\frac{(30-20)}{20}$

$\frac{(30-20)}{20} = \frac{10}{20} = \frac{1}{2} = 0.5 = 50\%$

So the increase of 20 to 30 is increase of 50%

3. Evaluate:
$23 \times 103 + 23 \times (-3)$
$= 23 \times 103 + 23 \times (-3)$
$= 23 \times 103 - 69$

4.(i) 3/5
$= \frac{(3 \times 2)}{(5 \times 2)} = \frac{6}{10}$
$= \frac{(3 \times 3)}{(5 \times 3)} = \frac{9}{15}$ and $\frac{(3 \times 4)}{(5 \times 4)} = \frac{12}{20}$

(ii) $\frac{4}{-7}$.

$= \frac{(4\times2)}{(-7\times2)} = \frac{8}{-14}$.

$= \frac{(4\times3)}{(-7\times3)} = \frac{12}{-21}$

$= \frac{(4\times4)}{(-7\times4)} = \frac{16}{-28}$.

$= \frac{16}{-28}$

(iii) $\frac{-5}{9}$

$= \frac{(-5\times2)}{9\times2)} = \frac{-10}{18}$.

$= \frac{(-5\times3)}{(9\times3)} = \frac{-15}{27}$

$= \frac{(-5\times4)}{(9\times4)} = \frac{-20}{36}$.

(iv) $\frac{8}{-15}$

$= \frac{(8\times2)}{(-15\times2)} = \frac{16}{-30}$.

$= \frac{(8\times3)}{(-15\times3)} = \frac{24}{-45}$ $= \frac{(8\times4)}{(-15\times4)} = \frac{32}{-60}$

5.(i) $-3 = \frac{-3}{1}$ is a rational number.

(ii) $0 = \frac{0}{1}$ is rational number.

(iii) $\frac{0}{4}$ is a rational number.

(iv) $\frac{8}{0}$ is not a rational number.

(v) $\frac{0}{0}$ is not a rational number. as both are zero.

6. Ans- $\frac{7}{10}, \frac{-11}{-30}$ and $\frac{5}{-15}$.

$= \frac{7}{10}, \frac{11}{30}$ and $\frac{-5}{15}$.

$= \frac{7 \times 3}{10 \times 3}, \frac{11}{30}$ and $\frac{-5 \times 2}{15 \times 2}$

(Lcm of 10, 30 and 15 = 30

$= \frac{21}{30}, \frac{11}{30}, \frac{-10}{30}$

$= \frac{-10}{30}, \frac{11}{30}, \frac{21}{30}$

$= \frac{5}{-15}, \frac{-11}{-30}, \frac{7}{10}$ (Ans).

7. Add:

i) $\frac{-9}{25}$ and $\frac{1}{-75}$.

Ans- $\frac{-9}{25} + \frac{-1}{75}$.

$= \frac{-9 \times 3}{25 \times 3} + \frac{-1 \times 1}{75 \times 1}$

(Lcm of 25 and 75 = 75)

$= \frac{-27}{75} + \frac{-1}{75}$

$= \frac{(-27) + (-1)}{75} = \frac{-27-1}{75}$

$= \frac{-28}{75}$.

8. Sum of two rational number = $\frac{-7}{12}$
and one of them = $\frac{13}{24}$.

The other rational number

$= \frac{-7}{12} - \frac{13}{24}$.

$= \frac{-7 \times 2}{12 \times 2} - \frac{13}{24}$.

$= \frac{-14}{24} - \frac{13}{24} = \frac{-14-13}{24} = \frac{-27}{24}$

9. Evaluate:

i) $\left(-\frac{4}{5} \times \frac{3}{2}\right) + \left(\frac{-9}{-5} \times \frac{10}{3}\right) - \left(\frac{-3}{2} \times \frac{-1}{4}\right)$

$= -\frac{6}{5} + (-8) - \frac{3}{8}$

$= \frac{-6}{5} + -6 - \frac{3}{8}$.

$= \frac{-48 - 240 - 15}{40}$

$= -\frac{303}{40}$ (Ans)

(ii) $\left(\frac{-35}{39} \times \frac{-13}{7}\right) - \left(\frac{7}{90} \times \frac{-18}{14}\right)$.

$= \left(\frac{-35}{39} \times \frac{-13}{7}\right) - \left(\frac{7}{90} \times \frac{-18}{14}\right)$

$= \frac{(-5 \times -1)}{(3 \times 1)} - \frac{(1 \times -1)}{(5 \times 2)}$.

$= \frac{5}{3} - \frac{(-1)}{(10)}$

LCM of 3 and 10 is 30.

$= \frac{5 \times 10}{3 \times 10} + \frac{1}{(10 \times 3)}$

$= \frac{(50+3)}{30} = \frac{53}{30} = 1\frac{23}{30}$ (Ans)

10. $\frac{9}{17}$ and $\frac{6}{13}$

$= \frac{9+6}{17+13} = \frac{15}{30} = \frac{1}{2}$

11. Distance covered in 1 liter petrol
$= 31\frac{1}{4}$ Km $= \frac{125}{4}$ Km.

Distance covered in $1\frac{3}{5}$ liter of petrol
$= \frac{125}{4} \times \frac{8}{5}$.

$= \frac{1000}{20} = 50$ Km.

12.(i) $(7.5 \times 40.4) \div 25$
$= \frac{303}{25} = 12.12.$

ii) $2.1 \div (0.1 \times 0.1)$.
$= \frac{2.1 \times 100}{0.01 \times 100} = \frac{210}{1} = 210$
$= 210$ (Ans)

13. (i) 1·28

Ans- $1\cdot28 = 1 + 0\cdot28$

$= 1 + \frac{28-0}{99}$.

$= 1 + \frac{28}{99} = 1\frac{28}{99}$.

(ii) $5\cdot234 = 5 + 0\cdot234$

$= 5 + \frac{234-0}{999} = 5\frac{234}{999}$.

14. (i) In $4\cdot2 \times 0\cdot6 = 2\cdot52$, significant figure are 3.

(ii) In $0\cdot08 \times 25 = 2\cdot00 = 2$ significant figure is 1.

iii) In $3\cdot6 \div 0\cdot12$ significant figure are 2.

15 (i) $5^4 \div 5^3 \times 5^5 = \frac{5^4}{5^3} \times 5^5 = 5^{4-3+5} = 5^6$

(ii) $4^4 \div 4^3 \times 4^0 = \frac{4^4}{4^3} = 4^{4-3} = 4$

(iii) $(3^5 \times 4^7 \times 5^8)^0 = 3^{5\times0} \times 4^7 \times 5^{8\times0}$

$= 3^0 4^0 5^0 = 1 \times 1 \times 1 = 1$.

16. $\frac{a^{-7} \times b^{-7} \times c^{5} \times d^{4}}{a^{3} \times b^{-5} \times c^{-3} \times d^{8}}$

$= a^{-7-3} \times b^{-7+5} \times c^{5-(-3)} \times d^{4-8}$
$= a^{-10} \times b^{-2} \times c^{5-(-3)} \times d^{4-8}$
$= a^{-10} \times b^{-2} \times c^{8} \times d^{-4}$.

17. i) $2x \div 15$ = Monomial
ii) $ax + 9$ = Binomial
iii) $3x^2 \times 5x$ = Monomial.

18. The coefficient of [redacted]

(i) (Ans) m in $-m$ = -1 (Ans).
(ii) (Ans) 15 in $-15p^2 = -p^2$ (Ans)

19. (i) The degree of $3y^3 - x^2y^2 + 4x$ is 4 as $x^2 y^2$ is the term which has highest degree.

ii) The degree of $p^3q^2 - 6p^2q^5 - p^4q^4$ is 8 as p^4q^4 is the term which has highest degree.

20. i Add:

(i) $4x^2+6x+22$

$4x^4+2x^3-2x^2+x-1$

$4x^4+8x^3-12x^2$

+

20. $4x^3+2x^2-x+1$, $2x^3-5x^2-3x+6$, x^2+8 and $5x^3-7x$.

$= 4x^3+2x^3+5x^3+2x^2-5x^2+x^2-x-3x-7x+1+6+8.$

$= 11x^3+3x^2-11x+15$

$= 11x^3-2x^2-11+15.$

21. $6m^3+4m^2+7m-3$ from $3m^3+4$.

$= (6m^3+4m^2+7m-3)-(3m^3+4)$

$= 6m^3+4m^2+7m-3-3m^3-4$

$= (6-3)m^3+4m^2+7m-4-3$

$= 3m^3+4m^2+7m-7.$

22 (i) $(c+5)(c-3) = c(c-3)+5(c-3)$

$= c^2-3c+5c-15.$

$= c^2+2c-15.$

(ii) $(3c-5d)(4c-6d)$.

$= 3c(4c-6d)-5d(4c-6d)$.

$= 12c^2-18cd-20cd+30d^2$

$= 12c^2-38cd+30d^2$

23. $9x^2-24xy+16y^2$ by $3x-4y$.

$$
\begin{array}{r|l}
 & 3x-4y \\
\hline
3x-4y & 9x^2-24xy+16y^2 \\
 & 9x^2-12xy \\
\hline
 & -12xy+16y^2 \\
 & -12xy+16y^2 \\
\hline
 & \times\times\times
\end{array}
$$

$= 3x-4y.$

24. $y + \frac{y}{2} = \frac{7}{4} - \frac{y}{4}$.

$= \frac{y}{1} \quad \frac{y+y}{2} = \frac{(7-y)}{4}$.

$= \frac{4y}{4} + \frac{2y}{4} = \frac{(7-y)}{4}$.

$= 6y = 7 - y$

$= 7y = 7$

$y = 1$.

25. The first number $= x$

The second number $= y$.

$x + y = 18$.

and $x = 27$.

$2y + y = 18$

$x = 2y = 18$.

$= 3y = 18$.

$= y = \frac{18}{3} = 6$.

$x = 2 \times 6 = 12$

The two numbers are 12, 6.

26(i) {3, 6, 9, 12, 15}
= {x : x is a natural divisible by 3, x < 18.

ii) {2, 3, 5, 7, 11, 13}.
= {x : x is a prime number.

iii) {1, 4, 9, 16, 25, 36}.
= {x : x is a perfect square ; x < 36.

iv) {0, 2, 4, 6, 8, 10, 12}
= {x : x is a whole number divisible by 2.

v) {Monday, Tuesday, Wednesday}.
= {x : x is one of the first three days of a week.

vi) {23, 25, 27, 29, ---}.
= {x : x is an odd natural number $x \geq 23$.

27. G = {x : x is a perfect square number, x ∈ N and $x \leq 30$.

n(G) = 5.

28 (i) Even numbers not divisible by 2: It is a null set.

(ii) Squares of natural numbers: It is an infinite set.

(iii) Coins used in India: It is a finite set as these are countable.

(iv) $C = \{x | x$ is a prime number between 7 and 10$\}$.
As there is not such prime number between 7 and 10. Hence it is a null set.

29 (i) $N(P)$
Ans- $n(P)$ = factors of 12 are
$= 1, 2, 3, 4, 6, 12$
$n(P) = 6$.

(ii) $n(Q)$
Ans- $n(Q)$ = factors of 16 are $= 1, 2, 4, 8, 16$
$n(Q) = 5$.

iii) Q-P and n(Q-P).

Ans- Q-P and n(Q-P)

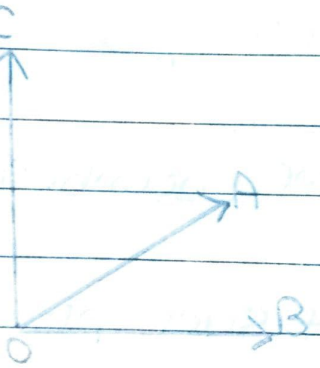
Elements of set P = 1, 2, 3, 4, 6, 12.

Elements of set Q = 1, 2, 4, 8, 16.

Q-P = 8, 16

n(Q-P) = 2

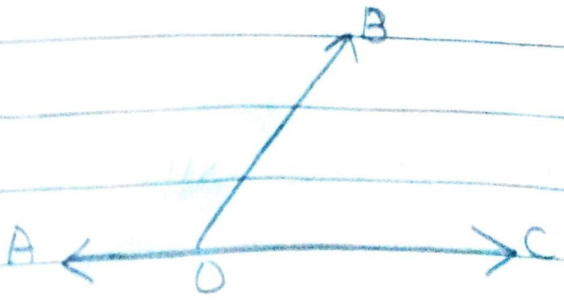
30(i)



If ∠AOB and ∠AOC are adjacent angles if they have OA their common arm.

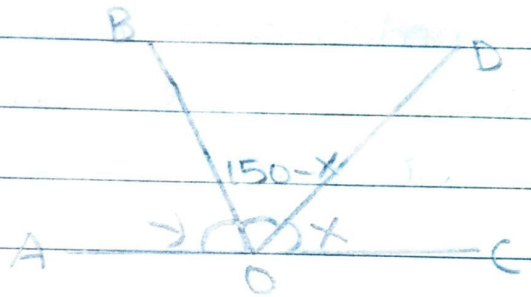
In this figure, OA is their common arm ∠AOB and ∠AOC are adjacent angles.

(ii)



If $\angle AOB$ and $\angle AOC$ are adjacent angles they have OA their Common arm.
In this figure, OB their Common arm
$\angle AOB$ and $\angle AOC$ are not adjacent angles.

31.



AOC is a Striaght line

$\angle AOB + \angle BOD + \angle DOC = 180^\circ$

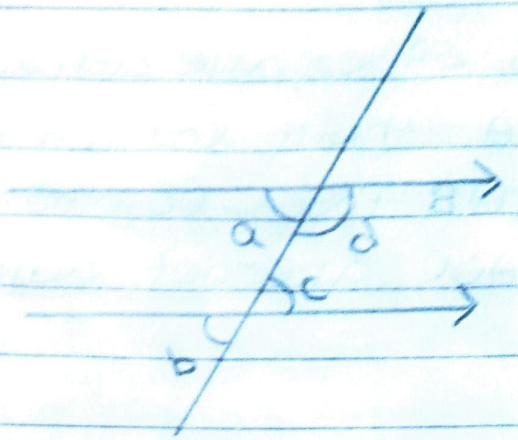
$= y + 150^\circ - x + x = 180^\circ$

$= y + 150^\circ = 180^\circ$

$= y = 180^\circ - 150^\circ = 30^\circ$

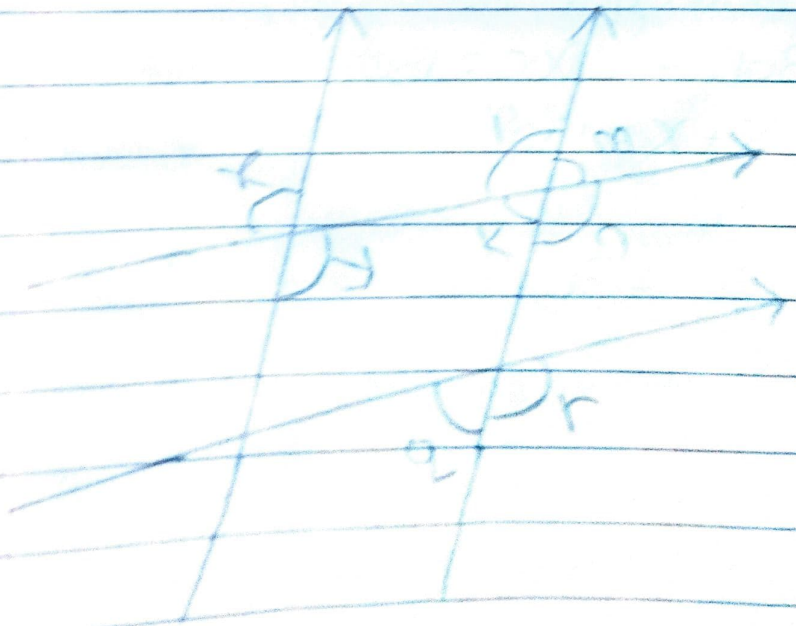
Hence, $y = 30^\circ$

32(i)



A = b = (corresponding angles)
B = C = vertically opposite angles
A = C = Alternate angles.
A = b = C.

(ii)



$x = y$ = vertically opposite angles.
$y = l$ = Alternate angles.
$x = l$ = Corresponding angles.
$n = R$ [illegible] = Corresponding angles.
$x = y = l = n = r$
Again $m = k$ = vertically opposite angles.
$k = q$ = Corresponding angles.

$m = k = q$.

33. $AB \parallel CD$
$B = C$ and $\angle A = \angle C$ Alternate angles.
Now in ΔPCD.
Ext $\angle APC = \angle C + \angle D$
$\Rightarrow a = b + c$.
if $b = 60^\circ$ $c = 50^\circ$ then
$a = b + c = 60^\circ + 50^\circ = 110^\circ$
If $a = 100^\circ$ and $b = 55^\circ$

34. $= 61^\circ + \angle B + \angle C = 180^\circ$

$= \angle B + \angle C = 180^\circ - 61^\circ = 119^\circ$

But $\angle B : \angle C = 1\frac{1}{2} : 1\frac{1}{3} = \frac{3}{2} : \frac{4}{3}$

$= \frac{9:8}{6}$

$= 9:8$

$= 17x = 119^\circ$

$= x = \frac{119^\circ}{17} = 7^\circ$

$= \angle B = 9x7^\circ = 63^\circ$

$\angle C = 8x = 8x7^\circ = 56^\circ$.

35. (i) Exterior angle = Sum of its interior opposite angles

$110^\circ = x^\circ + 30^\circ$

$= x^\circ = 110^\circ - 30^\circ = 80^\circ$

ii) Exterior angle = Sum of its interior opposite angles.

$120^\circ = y^\circ + 60^\circ$

$= y^\circ = 120^\circ - 60^\circ = 60^\circ$

iii) Exterior angle = Sum of its interi
or opposite angles.
$122^\circ = K^\circ + 35^\circ$
$= K^\circ = 122^\circ - 35^\circ = 87^\circ$.

iv) Exterior angle = Sum of its interior opposite angles.
$135^\circ = a^\circ + 73^\circ$
$= a^\circ = 135^\circ - 73^\circ = 62^\circ$

36. (i) $m = 35^\circ$ Angles opposite to equal sides.

But $m + n + (60^\circ + 35^\circ) = 180^\circ$
(Angles of a triangle).
$= m + n + 95^\circ = 180^\circ$
$= 35^\circ + n + 95^\circ = 180^\circ$
$= n + 130^\circ = 180^\circ$
$= n = 180^\circ - 130^\circ = 50^\circ$
Hence $m = 35^\circ, n = 50^\circ$

ii) $m = 35^\circ$ Angles opposite to equal sides

But $m + n + 60^\circ + 35^\circ = 180^\circ$ (Angles of a triangle).

$= m + n + 95^\circ = 180^\circ$

$= 35^\circ + n + 95^\circ = 180^\circ$

$= n + 130^\circ = 180^\circ$, $= n = 180^\circ - 130^\circ = 50^\circ$

Hence $m = 35^\circ$, $n = 50^\circ$.