Jender Heart High School, Sec-33B chd.

Class: VIII

Subject: Mathematics **Teacher:** Deepti

Revision of Chapter: Factorisation
Chapter: 15: Linear equation

Quest 1. Factorise the following:

a) $18(x+y) - 27(x+y)^3$
b) $ab^2 + (a-1)b - 1$
c) $x(x+y-z) - yz$
d) $125x^2y - 5a^2y$
e) $1 - 0.64x^6$
f) $2a^2 + 5a + 3$
g) $3 + 23x - 8x^2$
h) $(x-y)^2 - 5(x-y) + 6$

Quest 2. Solve the given equation for x:

(i) $\frac{x-2}{3} + \frac{x-3}{4} = \frac{x-1}{2}$

(ii) $6(3x+2) - 5(6x-1) = 3(x-8) - 5(7x-6) + 9x$

(iii) $x - 40\%$ of $x = 12$

(iv) $\frac{8-3x}{5x+31} = \frac{2}{3}$

Solution:

Soln 1 a) $18(x+y) - 27(x+y)^3$
$= 9(x+y)[2 - 3(x+y)^2]$
$= 9(x+y)[2 - 3(x^2+y^2+2xy)]$
$= 9(x+y)(2 - 3x^2 - 3y^2 - 6xy)$

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b) $ab^2 + (a-1)b - 1$

$= ab^2 + ab - b - 1$

$= ab(b+1) - 1(b+1)$

$= \boxed{(b+1)(ab-1)}$ Ans.

c) $x(x+y-z) - yz$

$= x^2 + xy - xz - yz$

$= x(x+y) - z(x+y)$

$= \boxed{(x+y)(x-z)}$ Ans.

d) $25x^2y - 5a^2y$

$= 5y(25x^2 - a^2)$

$= 5y[(5x)^2 - a^2]$

$= \boxed{5y(5x-a)(5x+a)}$ Ans.

e) $1 - 0.64x^6 = (1)^2 - (0.8x^3)^2 = (1+0.8x^3)(1-0.8x^3)$

f) $2a^2 + 5a + 3$

$= 2a^2 + 2a + 3a + 3$

$= 2a(a+1) + 3(a+1)$

$= \boxed{(a+1)(2a+3)}$ Ans.

P
6
2 3

g) $3 + 23x - 8x^2$

$3 + 24x - 1x - 8x^2$

$3(1+8x) - x(1+8x)$

$\boxed{(1+8x)(3-x)}$ Ans.

P
-24
+24 -1

h) $(x-y)^2 - 5(x-y) + 6$, Put $x-y = a$

$a^2 - 5a + 6$

$a^2 - 2a - 3a + 6 = a(a-2) - 3(a-2) = (a-2)(a-3)$

Soln-2 $\frac{x-2}{3} + \frac{x-3}{4} = \frac{x-1}{2}$

$\frac{4(x-2)+3(x-3)}{12} = \frac{x-1}{2}$

$\frac{4x-8+3x-9}{6} = \frac{x-1}{1}$

$1(7x-17) = 6(x-1)$

$7x-17 = 6x-6$

$7x-6x = -6+17$

$\boxed{x = 11}$

(ii) $6(3x+2) - 5(6x-1) = 3(x-8) - 5(7x-6) + 9x$

$18x+12-30x+5 = 3x-24-35x+30+9x$

$-12x+17 = -23x+6$

$-12x+23x = 6-17$

$11x = -11$

$\boxed{x = -1}$

(iii) $x - 40\%\text{ of } x = 12$

$x - \frac{40}{100} \times x = 12$

$\frac{100x-40x}{100} = 12$

$\frac{60x}{100} = 12$

$x = \frac{12 \times 5}{3} = \boxed{20}$

(iv) $3(8-3x) = 2(5x+31)$

$24-9x = 10x+62$

$24-62 = 10x+9x$

$-38 = 19x$

$\Rightarrow x = \frac{-38}{19}$

$\boxed{x = -2}$

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Topic: Chapter-9 : Ratio and Proportion

In the last week assignment, we have discussed about "Ratio" and this week, we will understand about the topic proportion.

- Four quantities i.e a, b, c, d are said to be in proportion if $a : b = c : d$

$$a : b = c : d$$

a, d → extremes; b, c → means

If Product of extremes = Product of means

Continued proportion:

Three numbers a, b and c are said to be in continued proportion if $a : b = b : c$

or $\frac{a}{b} = \frac{b}{c}$

$\Rightarrow b^2 = ac$

Exercise - 9B

Soln 1 (iii) ₹14 : ₹21 = 2pens : 3pens

Product of extremes = $14 \times 3 = 42$

Product of means = $21 \times 2 = 42$

Product of extremes = Product of mean.

Hence true.

Soln 4 (iii) Let the fourth proportional to $1\frac{5}{7}, 2\frac{3}{4}, 3\frac{3}{5}, x$

$\Rightarrow 1\frac{5}{7} \times x = 2\frac{3}{4} \times 3\frac{3}{5}$

$\frac{12}{7} \times x = \frac{11}{4} \times \frac{18}{5} \Rightarrow x = \frac{11}{2\cancel{4}} \times \frac{\cancel{18}^{9}}{5} \times \frac{7}{12}$

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Subject : Mathematics
Topic : Chapter - 9

Teacher : Deepika

Soln 10: ratio of areas of Two field = 5 : 9
let the area of smaller field = x

$\Rightarrow$ $5 : 9 = x : 2331$

$$5 \times 2331 = 9 \times x$$
$$\frac{5 \times \cancel{2331}^{259}}{\cancel{9}_{1}} = x$$

$$x = 1295 \text{ m}^2$$

So, the area of smaller field is 1295 m^2

Soln 8 $18, x, 50$ are in continued proportion

$\Rightarrow$ $18 : x = x : 50$

$$\frac{18}{x} = \frac{x}{50}$$
$$18 \times 50 = x \times x$$
$$900 = x^2$$
$\Rightarrow$ $$x = \sqrt{900}$$
$$= 30$$

So, 18, 30, 50 are in continued proportion.