

Sangam Skm College- Nadi

Year 10

Mathematics

Worksheet 1

Solutions:

Factorize each of the following using **common factors**:

(i) $x^2 + xy$

$x(x + y)$

(iii) $x(x - 4) + y(x - 4)$

$(x - 4)(x + y)$

(iv) $xyz - 4xy - 2xz$

$x(yz - 4y - 2z)$

(ii) $-yx - zx$

$-x(y + z)$

(iv) $4nm + 20m$

$4m(n + 5)$

Factorize each of the following by **grouping**:

(i) $x(x+2) + 3(x+2)$

$(x + 2)(x + 3)$

(iii) $ma + mb - 3a - 3b$

$m(a + b) - 3(a + b)$

$(a + b)(m - 3)$

(v) $x^2 - 2x - 5x + 10$

$x(x - 2) - 5(x - 2)$

$(x - 2)(x - 5)$

(ii) $m(2m - 1) - (2m - 1)$

$(2m - 1)(m - 1)$

(iv) $xy + y^2 - x - y$

$y(x + y) - 1(x + y)$

$(x + y)(y - 1)$

Factorize the following **perfect square**

(i) $x^2 + 10x + 25$

$(x + 5)^2$

(iii) $x^2 - 8x + 16$

$(x - 4)^2$

(ii) $x^2 - 14x + 49$

$(x - 7)^2$

(iv) $x^2 + 6x + 36$

$(x + 6)^2$

Factorize the following using **difference of two squares**:

(i) $x^2 - 4$

$(x + 2)(x - 2)$

(iii) $100 - y^2$

$(10 - y)(10 + y)$

(ii) $1 - x^2$

$(1 + x)(1 - x)$

(iv) $4x^2 - 1$

$(2x + 1)(2x - 1)$

Simplify the following algebraic expressions:

(i) $2x - 3y - (5x + 7y)$

$$2x - 3y - 5x - 7y$$

$$2x - 5x - 3y - 7y$$

$$\underline{-3x - 10y}$$

(ii) $4a - 3(2 - a)$

$$4a - 6 + 3a$$

$$4a + 3a - 6$$

$$\underline{7a - 6}$$

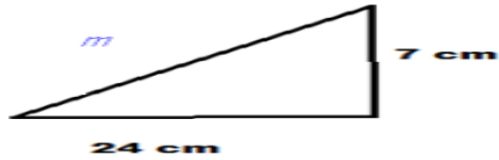
(iii) $\frac{16m^1}{4m^1} = \underline{4m}$

(iv) $\frac{(x+2)(\cancel{x+1})}{(x+\cancel{1})} = \underline{x+2}$

(v) $\frac{x^2 - 36}{x - 6} = \frac{(x+6)(\cancel{x-6})}{(x-\cancel{6})} = \underline{x+6}$

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Solution - Week 1
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1. Find the missing sides
 (a)



$$c^2 = a^2 + b^2$$

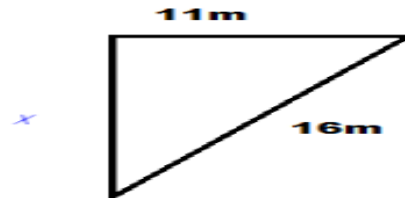
$$m^2 = 24^2 + 7^2$$

$$= 625$$

$$= \sqrt{625}$$

$$= 25 \text{ cm}$$

(b)



$$c^2 = a^2 + b^2$$

$$16^2 = 11^2 + x^2$$

$$256 = 121 + x^2$$

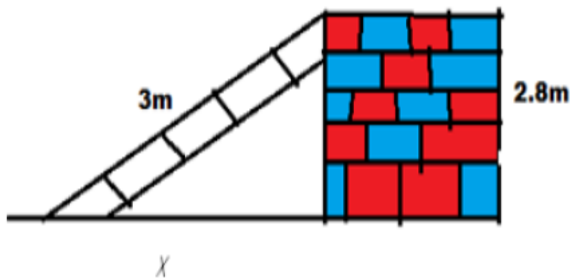
$$256 - 121 = x^2$$

$$135 = x^2$$

$$\sqrt{135} = \sqrt{x^2}$$

$$11.62 = x$$

2. A 3m ladder stands on a horizontal ground and reaches 2.8m up a vertical wall. How far is the foot of the ladder from the base of the wall?



$$c^2 = a^2 + b^2$$

$$3^2 = 2.8^2 + x^2$$

$$81 = 7.84 + x^2$$

$$81 - 7.84 = x^2$$

$$73.16 = x^2$$

$$\sqrt{73.16} = \sqrt{x^2}$$

$$8.55 \text{ m} = x$$