

المدرسة
الوطنية الأرثوذكسية
الشميساني



The National
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Shmaisani

Subject: Mathematics

Second Semester

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Grade 6 (B, C, D, E, F)

Unit 7: Equations and formulae.

Worksheet (3)

Solving equations.

A **one-step equation** is an algebraic equation you can solve in only one step.

To solve one-step equations, we do the **inverse** (opposite) of whatever **operation** is being performed on the variable.

The inverse operations are:

- Addition and subtraction
- Multiplication and division

The most important thing to remember is that whatever you do to one side of the equation, you have to do the same thing to the other side.

Example: find the value of x.

$$\begin{array}{r} x - 10 = 5 \\ + 10 \quad + 10 \\ \hline \end{array}$$

$$x = 15$$

Two-step equations.

A **two-step equation** is an algebraic equation you can solve in **two steps**.

Example:

$$\begin{array}{r} 7y + 5 = -2 \\ \underline{-5 \quad -5} \end{array}$$

$$7y = -2 - 5$$

$$7y = -7$$

divide both sides by 7

$$\frac{7y}{7} = \frac{-7}{7}$$

$$y = -1$$

Exercise: Find the value of the following variables.

$$1) x + 5 = 9$$

$$x = 4$$

$$2) 10y - 5 = 5$$

$$\frac{10y}{10} = \frac{10}{10}$$

$$y = 1$$

$$3) 3a + 4 = -5$$

$$\frac{3a}{3} = \frac{-9}{3}$$

$$a = -3$$

$$4) -5b = 20$$

$$b = -4$$

$$5) -9x - 4 = -22$$

$$\frac{-9x}{-9} = \frac{-18}{-9}$$

$$x = 2$$

$$6) 6 + 2y = 54$$

$$\frac{2y}{2} = \frac{48}{2}$$

$$y = 24$$

$$7) 13 - 5t = -20$$

$$\frac{-5t}{-5} = \frac{-33}{-5}$$

$$t = \frac{-33}{-5} \Rightarrow t = \frac{33}{5}$$

$$9) \frac{y}{5} + 6 = -2$$

$$\frac{y}{5} = -8$$

$$y = -40$$

$$8) \frac{n \times 7}{7} = 5 \times 7$$

$$n = 35$$

$$10) 6 - b = -10$$

$$-1 \times -b = -16 \times -1$$

$$b = 16$$

$$11) 3x - 5 = 19$$
$$\quad +5 \quad +5$$

$$3x = 24$$

$$x = 8$$

$$13) 2x + 12 = 13$$
$$\quad -12 \quad -12$$

$$2x = 1$$

$$x = \frac{1}{2}$$

$$15) \frac{x}{3} + 4 = 8$$
$$\quad -4 \quad -4$$

$$\frac{x}{3} = 4$$

$$x = 12$$

$$17) \frac{d}{4} - 1 = 1$$
$$\quad +1 \quad +1$$

$$\frac{d}{4} = 2$$

$$d = 8$$

$$19) -5y = 50$$

$$\quad \quad \quad \div 5 \quad \div 5$$

$$y = -10$$

$$21) 8a + a - 15 = -4$$
$$\quad +15 \quad +15$$

$$9a = 11$$

$$a = \frac{11}{9}$$

$$23) 11 = 5 + e$$

$$\quad -5 \quad -5$$

$$6 = e$$

$$12) 18 = 8m + 6 - 4m$$
$$\quad -6 \quad -6$$

$$12 = 4m$$

$$3 = m$$

$$14) 26 = 8x - 6$$
$$\quad +6 \quad +6$$

$$32 = 8x$$

$$4 = x$$

$$16) 4w = w + 3$$
$$\quad -w \quad -w$$

$$3w = 3$$

$$w = 1$$

$$18) 7 = \frac{g}{5} + 2$$
$$\quad -2 \quad -2$$

$$5 = \frac{g}{5}$$

$$25 = g$$

$$20) 13 - 6y = -5$$
$$\quad -13 \quad -13$$

$$-6y = -18$$

$$y = 3$$

$$22) \frac{36}{6} = \frac{6m}{6}$$

$$6 = m$$

$$24) 2x + 10 = -20$$
$$\quad -10 \quad -10$$

$$2x = -30$$

$$x = -15$$