



Word Problems Leading to Equations

Grade 7 Place Value Worksheet

Date: _____

Name: _____

LET'S MAKE WORD PROBLEMS LEADING TO EQUATIONS EASY

Solve the following problems

1. The sum of present ages of Esther and her father is 54 years. 6 years ago, her father was 6 times as old as her daughter. Find their present ages
2. After 12 years Tito will be 3 times as old as he was 4 years ago. What is his present age?
3. If 2 is subtracted from a number, then tripled, the result is 4 more than the given number. Find the number.
4. When the smaller of two consecutive integers is added to three times the larger integer the result is 43. Find both the numbers.
5. The angles of a triangle are $(3x)^\circ$; $(2x + 60)^\circ$ and $(5x - 40)^\circ$. Find each angle.
6. Two supplementary angles differ by 40° . Find their measure.
7. If two complementary angles differ by 20° , find the measure of each angle.
8. Find the multiple of 8, if the sum of two consecutive multiples of 8 is 184.
9. The sum of ages of father and son is 75 years. If the age of the son is 25 years, find the age of the father.
10. Jacob is 5 years younger than Luke. Four years later, Luke will be twice as old as Jacob. Find their present ages.



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Answers

1. Esther's age (E) is 12 years, and her father's present age (F) is 42 years.
2. Tito's present age is 12 years.
3. 5
4. The numbers are 10 and 11.
5. The first angle $3x^0 = 3 \times 16 = 48^0$
The second angle $2x^0 + 60^0 = 2 \times 16 + 60 = 92^0$
The third angle $5x^0 - 40^0 = 5 \times 16 - 40 = 40^0$
6. The two supplementary angles are 110^0 and 70^0
7. The two complementary angles are 55^0 and 35^0
8. The numbers are 88 and 96
9. The age of the father (F) is 50 years
10. The present age of Luke is 6 years while the present age of Jacob is 1 year.

1. Let E be Esther's present age and F be her father's present age.

The sum of their present ages is 54 years: $E + F = 54$

Six years ago, her father was 6 times as old as Esther:

$$F - 6 = 6(E - 6)$$

From equation 1:

$$E = 54 - F$$

Now, substitute this expression for E into equation 2:

$$F - 6 = 6(54 - F - 6)$$

$$F - 6 = 6(48 - F)$$

$F - 6 = 288 - 6F$ Combine like terms:

$$7F = 294$$

$$F = 42.$$

So therefore $E + 42 = 54$; $E = 12$.

So, Esther's age (E) is 12 years, and her father's present age (F) is 42 years.

2. We can express this information in the following equation:

$$T + 12 = 3(T - 4)$$

Now, let's solve for T :

$$T + 12 = 3T - 12$$

$$12 = 2T - 12$$

$$2T = 24$$

$T = 12$ Therefore, Tito's present age is 12 years.

3. Let's denote the number as x

So, we can express the equation as: $(x - 2)3 = 4 + x$

$$3x - 6 = 4 + x$$

$$3x - x = 4 + 6$$

$$2x = 10$$

$$x = 5$$

4. Let's denote the number as x

then two consecutive numbers are $x, x + 1$

So, we can express the equation as: $x + 3(x + 1) = 43$

$$x + 3x + 3 = 43$$

$$4x = 43 - 3$$

$$4x = 40$$

$$x = 10$$

Therefore the larger number is $x + 1 = 10 + 1 = 11$.

The numbers are 10 and 11.

5. Since the sum of angles in a triangle is 180°

So we have :

$$3x^{\circ} + 2x^{\circ} + 60^{\circ} + 5x^{\circ} - 40^{\circ} = 180^{\circ}$$

$$3x^{\circ} + 2x^{\circ} + 5x^{\circ} + 60^{\circ} - 40^{\circ} = 180^{\circ}$$

$$10x^{\circ} + 20 = 180^{\circ}$$

$$10x^{\circ} = 180^{\circ} - 20^{\circ}$$

$$10x^{\circ} = 160^{\circ}$$

$$x = 16^{\circ}$$

So the first angle $3x^{\circ} = 3 \times 16 = 48^{\circ}$

The second angle $2x^{\circ} + 60^{\circ} = 2 \times 16 + 60 = 92^{\circ}$

The third angle $5x^{\circ} - 40^{\circ} = 5 \times 16 - 40 = 40^{\circ}$

6. Let's denote the measures of the two supplementary angles as x and y , where $x > y$.

The sum of supplementary angles is 180 degrees:

$$x + y = 180$$

The question states that the angles differ by 40 degrees

$$x - y = 40$$

Now, we have two equations with two variables:

Let's solve this. Adding the two equations eliminates y :

$$(x+y)+(x-y) = 180 + 40$$

$$2x = 220$$

$$x = 110$$

Now that we have the value of x . Let's use the first equation to find y :

$$110 + y = 180$$

$$y = 180 - 110$$

$$y = 70.$$

So, the two supplementary angles are 110° and 70°

7. Let's denote the measures of the two complementary angles as x and y , where $x > y$.

The sum of complementary angles is 90 degrees:

$$x + y = 90$$

The question states that the angles differ by 20 degrees

$$x - y = 20$$

Now, we have two equations with two variables:

Let's solve this. Adding the two equations eliminates y :

$$(x+y)+(x-y) = 90 + 20$$

$$2x = 110$$

$$x = 55$$

Now that we have the value of x . Let's use the first equation to find y :

$$55 + y = 90$$

$$y = 90 - 55$$

$$y = 35.$$

So, the two complementary angles are 55° and 35°

8. Let's denote the consecutive multiples of 8 as x and $x + 8$, where x is the smaller multiple.

The sum of these two consecutive multiples is given as 184:

$$x + (x+8) = 184$$

$$2x + 8 = 184$$

$$2x = 176$$

$$x = 88$$

So, the smaller multiple of 8 is 88, and the next consecutive multiple is $88+8 = 96$

Therefore, the numbers are 88 and 96

9. Let's denote the age of the father as F and the age of the son as S

So, we have $F + S = 75$

$$F + 25 = 75$$

$$F = 50$$

So, the age of the father (F) is 50 years

10. Let Luke's present age be x . Then Jacob's present age = $x - 5$

After 4 years Luke's age = $x + 4$, Jacob's age will be $x - 5 + 4$ after 4 years.

According to the information given, Luke will be twice as old as Jacob.

So that, $x + 4 = 2(x - 5 + 4)$

$$x + 4 = 2(x - 1)$$

$$x + 4 = 2x - 2$$

$$x + 4 = 2x - 2$$

$$x - 2x = -2 - 4$$

$$x = 6$$

So, Jacob's present age = $x - 5 = 6 - 5 = 1$

Therefore, Luke's present age = 6 years and Jacob's present age = 1 year.