

Name \_\_\_\_\_

**Solve. Section 5.6A NUMBER PROBLEMS.**

1) The sum of a number and 100 times its reciprocal is  $-20$ . Find the number. 1) \_\_\_\_\_

Let  $x$  be "a number", so  $1/x$  is "its reciprocal", hence  $100(1/x)$  is "100 times its reciprocal".

$$x + 100(1/x) = -20$$

$x + (100/x) = -20$  Now: clear the fractions, gather like terms, factor, and then solve for  $x$ .

2) The sum of a number and 9 times its reciprocal is  $-6$ . Find the number. 2) \_\_\_\_\_

3) The sum of a number and 6 times its reciprocal is 5. Find the number(s). 3) \_\_\_\_\_

4) The sum of a number and 4 times its reciprocal is 5. Find the number(s). 4) \_\_\_\_\_

5) A number minus 8 times its reciprocal is 2. Find the number(s). 5) \_\_\_\_\_  
 $x - 8(1/x) = 2$

6) A number minus 6 times its reciprocal is 1. Find the number(s). 6) \_\_\_\_\_

7) The sum of a number and 8 times its reciprocal is  $-6$ . Find the number(s). 7) \_\_\_\_\_

8) The sum of a number and 10 times its reciprocal is  $-7$ . Find the number(s). 8) \_\_\_\_\_

9) The sum of a number and its reciprocal is  $-2$ . Find the number. 9) \_\_\_\_\_

10) The reciprocal of 9 plus the reciprocal of  $-10$  is the reciprocal of what number? 10) \_\_\_\_\_

11) The reciprocal of 7 plus the reciprocal of 4 is the reciprocal of what number? 11) \_\_\_\_\_

12) The reciprocal of the product of two consecutive positive integers is  $\frac{1}{380}$ . Find the two integers. 12) \_\_\_\_\_

**Partial Solution:**

Let  $x$  be "a positive Integer", so  $x + 1$  is the "next consecutive positive Integer", hence  $x(x + 1)$  is "the product of two consecutive positive integers". Therefore,  $1 / [ x(x + 1) ] = 1/380$ . Now multiply both sides by  $380x(x + 1)$ , gather like terms, and then factor to solve for  $x$ .

13) The reciprocal of the product of two consecutive positive integers is  $\frac{1}{240}$ . Find the two integers. 13) \_\_\_\_\_

14) The reciprocal of the product of two consecutive positive integers is  $\frac{1}{42}$ . Find the two integers. 14) \_\_\_\_\_

15) The reciprocal of the product of two consecutive positive integers is  $\frac{1}{210}$ . Find the two integers. 15) \_\_\_\_\_

16) The reciprocal of -9 plus the reciprocal of -6 is the reciprocal of what number? 16) \_\_\_\_\_

**Solve the problem. Must understand average.**

17) A taxi company charges riders a fixed charge of \$2.00 plus \$1.40 per mile. How many miles must a rider go to have an average cost per mile of \$1.60? 17) \_\_\_\_\_

**Set up like:**

$$(\$2.00 + \$1.40x)/x = \$1.60 \text{ or}$$

$$\$2.00/x + \$1.40 = \$1.60$$

**Multiply both sides by x, gather like terms and then solve for x.**

18) A taxi company charges riders a fixed charge of \$1.90 plus \$1.20 per mile. How many miles must a rider go to have an average cost per mile of \$1.50? 18) \_\_\_\_\_

19) A cleaning company has monthly fixed costs of \$8000 for its facilities and it costs \$70 per house for each house that it cleans. How many houses must the company clean each month to have an average cost per house of \$100? 19) \_\_\_\_\_

20) A cleaning company has monthly fixed costs of \$10,000 for its facilities and it costs \$80 per house for each house that it cleans. How many houses must the company clean each month to have an average cost per house of \$150? 20) \_\_\_\_\_

21) A cleaning company has monthly fixed costs of \$10,000 for its facilities and it costs \$80 per house for each house that it cleans. How many houses must the company clean each month to have an average cost per house of \$130? 21) \_\_\_\_\_

- 22) A cleaning company has monthly fixed costs of \$12,000 for its facilities and it costs \$90 per house for each house that it cleans. How many houses must the company clean each month to have an average cost per house of \$150? 22) \_\_\_\_\_
- 23) A company has monthly fixed costs of \$14,000 for its facilities and it costs \$80 per unit for each unit that it produces. How many units must the company produce to have an average cost per unit of \$110? 23) \_\_\_\_\_
- 24) A company has monthly fixed costs of \$10,000 for its facilities and it costs \$80 per unit for each unit that it produces. How many units must the company produce to have an average cost per unit of \$110? 24) \_\_\_\_\_
- 25) A company has monthly fixed costs of \$14,000 for its facilities and it costs \$100 per unit for each unit that it produces. How many units must the company produce to have an average cost per unit of \$170? 25) \_\_\_\_\_
- 26) A company has monthly fixed costs of \$21,000 for its facilities and it costs \$270 per unit for each unit that it produces. How many units must the company produce to have an average cost per unit of \$450? 26) \_\_\_\_\_
- 27) A company has monthly fixed costs of \$30,000 for its facilities and it costs \$270 per unit for each unit that it produces. How many units must the company produce to have an average cost per unit of \$440? 27) \_\_\_\_\_
- 28) An airport limo service charges riders a fixed charge of \$17 plus \$3.00 per mile. How many miles must a rider go to have an average cost per mile of \$3.80? 28) \_\_\_\_\_
- 29) An airport limo service charges riders a fixed charge of \$18 plus \$3.00 per mile. How many miles must a rider go to have an average cost per mile of \$3.90? 29) \_\_\_\_\_

## Answer Key

Testname: WORKSHEET5.6A\_SOLVINGNUMBERPROBLEMS\_V02

- 1) -10
- 2) -3
- 3) 2 or 3
- 4) 1 or 4
- 5) 4 or -2
- 6) 3 or -2
- 7) -2 or -4
- 8) -2 or -5
- 9) -1
- 10) 90
- 11)  $\frac{28}{11}$
- 12) 19, 20
- 13) 15, 16
- 14) 6, 7
- 15) 14, 15
- 16)  $-\frac{18}{5}$
- 17) 10 miles
- 18) 6.3 miles
- 19) 267 houses
- 20) 143 houses
- 21) 200 houses
- 22) 200 houses
- 23) 467 units
- 24) 333 units
- 25) 200 units
- 26) 117 units
- 27) 176 units
- 28) 21.3 miles
- 29) 20 miles