

Name _____

Solve. Section 5.6A NUMBER PROBLEMS.

1) The sum of a number and 64 times its reciprocal is -16. Find the number. 1) _____

Let x be "a number", so $1/x$ is "its reciprocal", hence $64(1/x)$ is "64 times its reciprocal".

$$x + 64(1/x) = -16$$

$x + (64/x) = -16$ Now: clear the fractions, gather like terms, factor, and then solve for x .

2) The sum of a number and 81 times its reciprocal is 18. Find the number. 2) _____

3) The sum of a number and 12 times its reciprocal is 8. Find the number(s). 3) _____

4) The sum of a number and 6 times its reciprocal is 7. Find the number(s). 4) _____

5) A number minus 10 times its reciprocal is 3. Find the number(s). 5) _____
 $x - 10(1/x) = 3$

6) A number minus 20 times its reciprocal is 1. Find the number(s). 6) _____

7) The sum of a number and 4 times its reciprocal is -5. Find the number(s). 7) _____

8) The sum of a number and 5 times its reciprocal is -6 . Find the number(s). 8) _____

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

10) The reciprocal of 7 plus the reciprocal of -5 is the reciprocal of what number? 10) _____

11) The reciprocal of 4 plus the reciprocal of -8 is the reciprocal of what number? 11) _____

12) The reciprocal of the product of two consecutive positive integers is $\frac{1}{342}$. 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, $1 / [x(x + 1)] = 1/342$. Now multiply both sides by $342x(x + 1)$, gather like terms, and then factor to solve for x .

13) The reciprocal of the product of two consecutive positive integers is $\frac{1}{72}$. Find the two integers. 13) _____

14) The reciprocal of the product of two consecutive positive integers is $\frac{1}{156}$. Find the two integers. 14) _____

15) The reciprocal of the product of two consecutive positive integers is $\frac{1}{272}$. Find the two integers. 15) _____

16) The reciprocal of -6 plus the reciprocal of -2 is the reciprocal of what number? 16) _____

Solve the problem. Must understand average.

17) A taxi company charges riders a fixed charge of \$1.60 plus \$1.50 per mile. How many miles must a rider go to have an average cost per mile of \$1.90? 17) _____

Set up like:

$$(\$1.60 + \$1.50x)/x = \$1.90 \text{ or}$$

$$\$1.60/x + \$1.50 = \$1.90$$

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

18) A taxi company charges riders a fixed charge of \$1.50 plus \$1.60 per mile. How many miles must a rider go to have an average cost per mile of \$2.10? 18) _____

19) A cleaning company has monthly fixed costs of \$14,000 for its facilities and it costs \$60 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? 19) _____

20) A cleaning company has monthly fixed costs of \$13,000 for its facilities and it costs \$60 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 \$110? 20) _____

21) A cleaning company has monthly fixed costs of \$13,000 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 \$110? 21) _____

- 22) A cleaning company has monthly fixed costs of \$8000 for its facilities and it costs \$60 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 \$110? 22) _____
- 23) A company has monthly fixed costs of \$13,000 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 \$140? 23) _____
- 24) A company has monthly fixed costs of \$11,000 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 \$130? 24) _____
- 25) A company has monthly fixed costs of \$14,000 for its facilities and it costs \$60 per unit for each unit that it produces. How many units must the company produce to have an average cost per unit of \$100? 25) _____
- 26) A company has monthly fixed costs of \$22,000 for its facilities and it costs \$230 per unit for each unit that it produces. How many units must the company produce to have an average cost per unit of \$340? 26) _____
- 27) A company has monthly fixed costs of \$24,000 for its facilities and it costs \$250 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 \$19 plus \$4.00 per mile. How many miles must a rider go to have an average cost per mile of \$5.00? 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 \$4.00? 29) _____

Answer Key

Testname: WORKSHEET5.5B_SOLVFORAGIVENVARIABLE_V01

- 1) -8
- 2) 9
- 3) 2 or 6
- 4) 1 or 6
- 5) 5 or -2
- 6) 5 or -4
- 7) -1 or -4
- 8) -1 or -5
- 9) -1
- 10) $-\frac{35}{2}$
- 11) 8
- 12) 18, 19
- 13) 8, 9
- 14) 12, 13
- 15) 16, 17
- 16) $-\frac{3}{2}$
- 17) 4 miles
- 18) 3 miles
- 19) 200 houses
- 20) 260 houses
- 21) 433 houses
- 22) 160 houses
- 23) 325 units
- 24) 367 units
- 25) 350 units
- 26) 200 units
- 27) 126 units
- 28) 19 miles
- 29) 18 miles