

name Answer Key:

PROBLEM SOLVING

WORK

Discovering Number Patterns

In mathematics we study patterns. By studying a pattern, you can discover other numbers that follow the same pattern. Look at the example.

Example: Find the pattern. Fill in the missing numbers.

5, 8, 11, 14, 17, _____, _____, _____.

Solution: Each number in the pattern is found by adding 3 to the previous number.
The next three numbers in this pattern are 20, 23, and 26.

Find the pattern and write the next three numbers.

1. 1, 2, 3, 4, 5, 6, 7, 8

2. 1, 4, 7, 10, 13, 16, 19

3. 4, 8, 12, 16, 20, 24, 28, 32

4. 1, 3, 5, 7, 9, 11, 13

5. 1, 2, 4, 8, 16, 32, 64, 128

6. 7, 10, 13, 16, 19, 22

7. 1, 100, 2, 99, 3, 98, 4, 97

8. 12, 23, 34, 45, 54, 63

9. 1, 3, 6, 10, 15, 21, 28, 36

10. 25, 75, 125, 175, 225

11. 5, 7, 7, 9, 9, 11, 11, 13

12. 50, 150, 250, 350, 450

13. 2, 3, 5, 8, 12, 17, 23, 30

14. 1, 3, 2, 4, 3, 5, 4

15. 63, 54, 45, 36, 27, 18, 9, 0

16. 76, 71, 68, 63, 60, 55

Function Tables

Rule: $b = a \div 2$

Input	Output
a	b
2	$2 \div 2 = 1$
4	$4 \div 2 = 2$
6	$6 \div 2 = 3$
8	$8 \div 2 = 4$
10	$10 \div 2 = 5$

The rule of a function table tells you how to find the value of one variable when you know the value of the other variable.

These are the variables. If one column has a value, you can calculate the value of the other column.

Write the rule for each function table.

1.

Rule: $- 4$	
Input	Output
a	b
12	8
11	7
10	6
9	5

2.

Rule: $+ 7$	
Input	Output
a	b
1	8
3	10
5	12
7	14

3.

Rule: $\div 6$	
Input	Output
m	n
24	4
18	3
12	2
6	1

4.

Rule: $\div 2$	
Input	Output
p	r
26	13
22	11
18	9
14	7

5.

Rule: $\times 2$	
Input	Output
x	y
6	12
8	16
10	20
12	24

6.

Rule: $\div 2$	
Input	Output
b	c
8	4
6	3
4	2
2	1

Function Tables

Complete each function table or rule.

1. **Rule:** $a = b + 3$

Input	Output
a	b
5	<u>2</u>
8	<u>5</u>
3	<u>0</u>

4. **Rule:** $y = x \times 4$

Input	Output
y	x
8	<u>2</u>
20	<u>5</u>
<u>28</u>	7

7. **Rule:** $t = s - 5$

Input	Output
t	s
3	<u>8</u>
<u>8</u>	13
<u>10</u>	15

10. **Rule:** $k + 4 = g$

Input	Output
k	g
2	<u>6</u>
8	<u>12</u>
<u>9</u>	13

13. **Rule:** $4r = w$

Input	Output
r	w
3	<u>12</u>
4	<u>16</u>
<u>15</u>	60

16. **Rule:** $p = e \div 3$

Input	Output
p	e
6	<u>18</u>
<u>1</u>	3
<u>2</u>	6

19. **Rule:** $m + 7 = n$

Input	Output
m	n
5	12
11	18
18	25

20. **Rule:** $y \cdot 3 = x$

Input	Output
y	x
10	30
12	36
22	66

21. **Rule:** $t \div 3 = s$

Input	Output
t	s
3	1
15	5
45	15

Answer Key: Word Problems:

1. A box of 30 would cost \$13.50. (Add \$2.50 for every 6)
2. It will pass again in 2061. (Every 76 years)
3. Her house number is 234.
4. Tom has seven nickels (and 8 dimes).
5. Following the pattern, he can plant 6 rows. Row one has 30. Row two has 25. Row 3 has 20. Row four has 15. Row five has 10. Row six has 5.