Name _____ Date _____ Class _____

Additional Practice

Investigation 1

Prime Time

1. For each of the following, use the set of clues to determine the secret number.

a. **Clue 1** The number has two digits.
Clue 2 The number has 13 as a factor.
Clue 3 The sum of the digits of the number is 11.

b. **Clue 1** The number is prime.
Clue 2 The number is less than 19.
Clue 3 The sum of the digits of the number is greater than 7.

2. The numbers 10, 20, and 30 on the 30-board in the Factor Game all have 10 as a factor. Does *any* number that has 10 as a factor also have 5 as a factor? Explain your reasoning.

3. The numbers 14, 28, and 42 on the 49-board in the Factor Game all have 7 as a factor and also have 2 as a factor. Does *any* number that has 7 as a factor also have 2 as a factor? Explain your reasoning.

Additional Practice *(continued)*

4. Look carefully at the numbers 1–30 on the 30-board used for playing the Factor Game. Pick the two different numbers on the 30-board that will give you the largest number when you multiply them together, and then answer the following questions.

a. What two numbers did you pick? What is the product of the two numbers?

b. Explain why the product of the two numbers you chose is the largest product you can get using two different numbers from the 30-board.

c. List all the proper factors of the product. Explain how you found the factors.

5. For each of the following, find three different numbers that can be multiplied together so that the given number is the product. Do not use 1 as one of the numbers.

a. 150 **b.** 1,000 **c.** 24 **d.** 66

Additional Practice *(continued)*

6. The number sequence 4, 6, 10 is a multiple of the number sequence 2, 3, 5 because the sequence 4, 6, 10 can be found by multiplying all the numbers in the sequence 2, 3, 5 by 2. That is, $4 = 2 \times 2, 6 = 2 \times 3, 10 = 2 \times 5$.

a. The number sequence 15, 25, 10 is a multiple of what number sequence?

b. Find two different sequences that are multiples of the number sequence 1, 4, 7.

c. Given a number sequence, how many different sets of multiples of that sequence do you think there are? Explain your reasoning.

7. For each set of numbers, write as many different multiplication and division statements as you can. For example, if the numbers are 5, 7, 35, you can write:

$5 \times 7 = 35$ $7 \times 5 = 35$ $35 \div 5 = 7$ $35 \div 7 = 5$

a. 6, 4, 24 **b.** 96, 12, 8, 3, 32 **c.** 6, 27, 108, 12, 4, 18, 9

d. When is a number called a factor of a number? A divisor of a number?

Name _____ Date _____ Class _____

Additional Practice: Digital Assessments

Investigation 1

Prime Time

8. Circle the numbers or equations that make the statement true.

The number $\begin{bmatrix} 2 \\ 7 \\ 9 \\ 95 \\ 178 \\ 188 \end{bmatrix}$ is a multiple of 94 because $\begin{bmatrix} 2 \times 94 = 178 \\ 2 \times 94 = 188 \\ 2 \times 47 = 94 \end{bmatrix}$.

9. Place each number in the correct category.

43 88 99 13 41 71 25 107 49 76

Prime	Composite

10. Using the numbers on the tiles provided below, write the factors of 36.

1	2	3	4	5
6	9	10	12	36

Factors of 36

11. Which of the following numbers are factors of 28? *Select all that apply.*

- ☐ 4
- ☐ 6
- ☐ 7
- ☐ 12
- ☐ 56

Name _____ Date _____ Class _____

Skill: Factors, Multiples, and Primes

List all the factors of each number.

1. 12

2. 45

3. 41

4. 54

5. 48

6. 100

7. 117

Skill: Factors, Multiples, and Primes *(continued)*

Tell whether the second number is a multiple of the first.

8. 2; 71 **9.** 1; 18 **10.** 3; 81 **11.** 4; 74

12. 9; 522 **13.** 8; 508 **14.** 13; 179 **15.** 17; 3,587

Tell whether each number is prime or composite.

16. 53 **17.** 86 **18.** 95 **19.** 17

20. 24 **21.** 27 **22.** 31 **23.** 51

24. 103 **25.** 47 **26.** 93 **27.** 56

28. Make a list of all the prime numbers from 50 through 75.

Name _____ Date _____ Class _____

Additional Practice

Investigation 2

Prime Time

1. On Saturdays, the #14 bus makes roundtrips between Susan's school and the mall, and the #11 bus makes roundtrips between the mall and the museum. Next Saturday, Susan wants to take the bus from her school to the museum. A #14 bus leaves Susan's school every 15 minutes, beginning at 7 A.M. It takes the bus 30 minutes to travel between the school and the mall. A #11 bus leaves the mall every 12 minutes, beginning at 7 A.M.

   a. If Susan gets on the #14 at 9:30 A.M., how long will she have to wait at the mall for a #11 bus? Explain your reasoning.

   b. If Susan gets on the #11 bus at the museum and arrives at the mall at 11:48 A.M., how long will she have to wait for the #14 bus? Explain your reasoning.

   c. At what times from 9 A.M. until noon are the #14 and #11 buses at the mall at the same time? Explain your reasoning.

2. Kyong has built two rectangles. Each has a width of 7 tiles.

   a. Each rectangle is made with an even number of tiles that is greater than 40 but less than 60. How many tiles does it take to make each rectangle? Explain your reasoning.

   b. What is the length of each of Kyong's rectangles? Explain your reasoning.

   c. Without changing the number of tiles used to make either rectangle, Kyong rearranges the tiles of each rectangle into different rectangles. What is a possibility for the length and width of each of Kyong's new rectangles? Explain your reasoning.

Additional Practice *(continued)*

3. Jack plays on a basketball team after school (or on the weekend) every third day of the month. He babysits his younger brother after school every seventh day of the month. How many times during a 30-day month, if any, will Jack have a conflict between basketball and babysitting? Explain your reasoning.

4. Suppose you have two different numbers which are both prime.

a. What is the least common multiple of the numbers? Explain your reasoning.

b. What is the greatest common factor? Explain your reasoning.

5. Find the least common multiple and the greatest common factor for each pair of numbers:

a. 8 and 12 **b.** 7 and 15 **c.** 11 and 17 **d.** 36 and 108

e. For which pairs in parts (a)–(d) is the least common multiple the product of the two numbers? Why is this so? What is special about the numbers in these pairs?

6. Find the greatest common factor of each pair of numbers:

a. 4 and 12 **b.** 5 and 15 **c.** 10 and 40 **d.** 25 and 75

e. When is the greatest common factor of two numbers one of the two numbers? Explain your reasoning.

Name _____ Date _____ Class _____

Additional Practice: Digital Assessments

Investigation 2

Prime Time

7. Using the numbers provided below, fill in each space to complete the statement. Some numbers may be used more than once.

2 3 4 6 8 10 12 20 48 50 60 120

a. Greatest common factor of 4 and 8: ☐; least common multiple of 4 and 8: ☐

b. Greatest common factor of 16 and 24: ☐; least common multiple of 16 and 24: ☐

c. Greatest common factor of 10 and 60: ☐; least common multiple of 10 and 60: ☐

d. Greatest common factor of 8 and 30: ☐; least common multiple of 8 and 30: ☐

8. Frank has built two rectangles. Each rectangle has a width of 9 tiles. The rectangles have different lengths. Each rectangle is made with an even number of tiles that is greater than 40 but less than 80. Circle the numbers that make each statement true.

a. One rectangle was built with $\begin{bmatrix}36\\46\\54\\61\end{bmatrix}$ tiles and the other was built with $\begin{bmatrix}63\\71\\72\\80\end{bmatrix}$ tiles.

b. The lengths of the two rectangles are $\begin{bmatrix}4\\5\\6\end{bmatrix}$ and $\begin{bmatrix}7\\8\\9\end{bmatrix}$ tiles.

Without changing the total number of tiles he has, Frank rearranges the tiles into two different rectangles.

c. Which of the following could be the dimensions of Frank's new rectangles? *Select all that apply*.

- ☐ 2 by 7 and 7 by 9
- ☐ 6 by 11 and 5 by 12
- ☐ 6 by 7 and 7 by 12
- ☐ 4 by 10 and 6 by 10
- ☐ 7 by 10 and 8 by 7

9. A red bus leaves a theme park every 24 minutes and a blue bus leaves the park every 20 minutes. They both leave the park at noon. When is the next time that both buses will leave the park?

- ○ 12:48 P.M.
- ○ 1:20 P.M.
- ○ 1:34 P.M.
- ○ 1:40 P.M.
- ○ 2:00 P.M.

Name _____ Date _____ Class _____

Skill: Least Common Multiple

Investigation 2

Prime Time

List multiples to find the LCM of each set of numbers.

1. 5, 10

2. 2, 3

3. 6, 8

4. 4, 6

5. 8, 10

6. 5, 6

7. 12, 15

8. 8, 12

9. 9, 15

10. 6, 15

11. 6, 9

12. 6, 18

13. 3, 5

14. 4, 5

15. 9, 21

16. 7, 28

17. One radio station broadcasts a weather forecast every 18 minutes and another station broadcasts a commercial every 15 minutes. If the stations broadcast both a weather forecast and a commercial at noon, when is the next time that both will be broadcast at the same time?

Name _____ Date _____ Class _____

Skill: Greatest Common Factor

Investigation 2

Prime Time

List the factors to find the GCF of each set of numbers.

1. 8, 12

2. 18, 27

3. 15, 23

4. 17, 34

5. 24, 12

6. 18, 24

7. 5, 25

8. 20, 25

9. 10, 15

10. 25, 75

11. 14, 21

12. 18, 57

13. 32, 24, 40

14. 25, 60, 75

15. 12, 35, 15

16. 15, 35, 20

17. Cameron is making bead necklaces. He has 90 green beads and 108 blue beads. What is the greatest number of identical necklaces he can make if he wants to use all of the beads?

Name _____ Date _____ Class _____

Additional Practice

Investigation 3

Prime Time

1. Solve each multiplication maze below. Record your solution for each maze by tracing the path through the maze.

a. **Maze 924**

Enter → | 2 | 3 | 7 | 2 |
---|---|---|---|
| 6 | 2 | 7 | 11 |
| 5 | 4 | 9 | 10 |

→ Exit

b. **Maze 1080**

2	8	6	3	→ Exit
27	5	7	2	
Enter → 2	5	2	9	

c. **Maze 38220**

Enter → | 14 | 39 | 70 | 91 |
---|---|---|---|
| 7 | 2 | 20 | 60 |
| 42 | 15 | 2 | 2 |
| 98 | 26 | 13 | 7 |

→ Exit

d. **Maze 210**

Enter →	3	10	3	14	→ Exit
2	3	5	7	
35	2	105	2	
7	15	6	3	

2. Use expanded form to write the prime factorization for each number.

a. 630

b. 144

c. 1,011

d. 133

e. 23

3. Use exponents to write the prime factorization for each number.

a. 630

b. 144

c. 64

d. 250

e. 392

Additional Practice *(continued)*

4. For each of the pairs of numbers given below, find the greatest common factor and the least common multiple.

a. 25 and 105 **b.** 27 and 81 **c.** 36 and 63

5. An odd number that is less than 160 has exactly three different prime factors. What is the number? Explain your reasoning.

6. What number has the prime factorization $2^3 \times 3^2 \times 5^2$?

7. a. Name a pair of numbers whose greatest common factor is the same as one of the numbers.

b. Name another pair of numbers whose greatest common factor is the same as one of the numbers.

c. Make a conjecture about what must be true about the least common multiple of any number pairs in which one number is the same as the greatest common factor.

Additional Practice *(continued)*

8. a. Are 45 and 64 relatively prime? Explain your reasoning.

b. Are 25 and 36 relatively prime? Explain your reasoning.

c. Is it possible for two numbers that are both even to be relatively prime? Why or why not?

d. How can you choose one number so that it will be relatively prime to any other number?

9. In the 1,000-locker problem, which students touched the lockers indicated?

a. both lockers 13 and 19

b. lockers 12, 16, and 20

10. In the 1,000-locker problem, what was the last locker touched by the students indicated?

a. both students 20 and 25

b. both students 13 and 19

c. all three students 3, 4, and 5

d. all three students 30, 40, and 50

Name _____ Date _____ Class _____

Additional Practice: Digital Assessments

Investigation 3

Prime Time

11. At a store, rolls come in packages of twenty and veggie burgers come in packages of twelve. Determine the least number of packages of each type that you can buy and have no rolls or burgers left over.

Circle the numbers that make the statement true.

You should purchase $\begin{bmatrix}1\\2\\3\\4\\5\end{bmatrix}$ packages of rolls and $\begin{bmatrix}2\\3\\4\\5\\6\end{bmatrix}$ packages of veggie burgers.

12. Using the numbers on the tiles provided below, fill in each space to write the prime factorization of the numbers. Tiles may be used more than once.

2	2^2	2^3	2^4
3	5	13	17

a. $60 = \square \times \square \times \square$

b. $136 = \square \times \square$

c. $80 = \square \times \square$

13. Use the numbers below to find the greatest common factor of each pair of numbers. Write the GCF in the appropriate box.

1 3 4 5 6 8 15 25 27

35, 115	30, 84	32, 56	15, 60

14. There are 36 students in a class. Circle the numbers that make each statement true.

a. The class can be divided evenly into $\begin{bmatrix}2\\3\\4\\6\end{bmatrix}$ groups with $\begin{bmatrix}4\\6\\7\end{bmatrix}$ students in each group.

b. The class can be divided evenly into $\begin{bmatrix}4\\8\\12\end{bmatrix}$ groups with $\begin{bmatrix}2\\3\\8\end{bmatrix}$ students in each group.

Name _____ Date _____ Class _____

Skill: Prime Factorization

Find the prime factorization of each number.

1. 58

2. 72

3. 40

4. 310

Find the number with the given prime factorization.

5. $2 \times 2 \times 5 \times 7 \times 11$

6. $7 \times 11 \times 13 \times 17$

7. There are 32 students in a class. How many ways can the class be divided into groups with equal numbers of students? What are they?

Write the prime factorization. Use exponents where possible.

8. 78

9. 126

10. 125

11. 90

12. 92

13. 180

Skill: Prime Factorization *(continued)*

Use prime factorization to find the LCM of each set of numbers.

14. 18, 21 **15.** 15, 21 **16.** 18, 24 **17.** 21, 24

18. At a store, hot dogs come in packages of eight and hot dog buns come in packages of twelve. What is the least number of packages of each type that you can buy and have no hot dogs or buns left over?

Use prime factorization to find the GCF of each set of numbers.

19. 57, 27 **20.** 24, 48 **21.** 56, 35 **22.** 29, 87

23. The GCF of two numbers is 850. Neither number is divisible by the other. What is the smallest that these two numbers could be?

Name _____ Date _____ Class _____

Additional Practice

Investigation 4

Prime Time

1. Make a conjecture about whether each result below will be odd or even. Support your conjecture.

a. the sum of two even numbers and one odd number

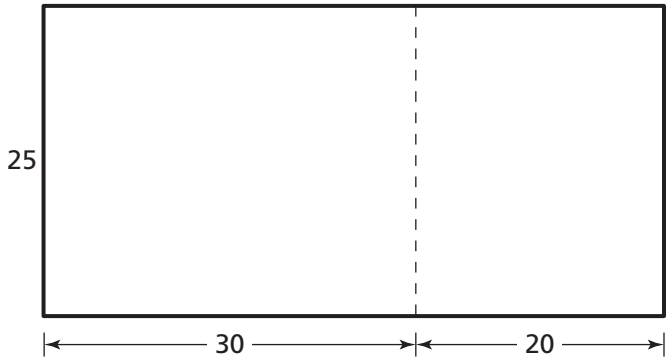
b. the sum of two odd numbers and one even number

c. the sum of three odd numbers

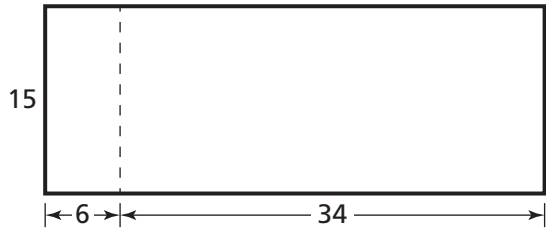
d. the sum of three even numbers

2. Write expressions for the area of each large rectangle in two different ways. Then find the area using each expression.

a.



b.



Additional Practice *(continued)*

3. Find a number to make each statement true.

a. $25 \times (10 + 7) = (25 \times \square) + (25 \times 7)$

b. $16 \times (13 + 32) = (\square \times 13) + (\square \times 32)$

c. $7 \times (92 + 7) = (7 \times 92) + (7 \times \square)$

d. $74 \times (19 + 19) = (74 \times \square) + (74 \times 19)$

e. $8(\square + 7) = 96$

f. $\square(21) + \square(4) = 300$

g. $12(\square - 21) = 144$

Additional Practice *(continued)*

4. Insert parentheses and/or addition signs to make each equation true.

a. 6 3 2 5 = 16

b. 6 3 2 5 = 23

c. 6 3 2 5 = 35

d. 6 3 2 5 = 36

5. Identify the error. Then find the correct solution.

$4 + 4(8 - 6)$

$= 8(8 - 6)$

$= 64 - 48$

$= 16$

Additional Practice *(continued)*

Decide on the operation(s) needed to solve the problem. Write a mathematical sentence, solve the problem, and explain your reasoning.

6. A small business employs 26 people for 5 days each week. Of the employees, 8 are paid $128 per day and the rest are paid $92 per day. How much does the business pay out to employees in one week?

7. Tickets to a school play cost $2.50 for a student and $5.00 for an adult. What is the total ticket sales if 50 student tickets and 75 adult tickets are sold?

8. Layne ran 3 miles a day for her first week of track practice. For the next two weeks, she ran 5 miles each day. How many miles did Layne run in her first three weeks of practice, assuming she ran 7 days a week?

9. Manny has $24 at the beginning of the day. He buys 3 drinks that each cost $3. He also buys 2 sandwiches, which are $5 each. Does Manny have any money left? If so, how much?

10. Hannah is 3 years older than her sister Anji. Their brother Tomas is 4 years younger than Hannah. How does Anji's age relate to Tomas' age?

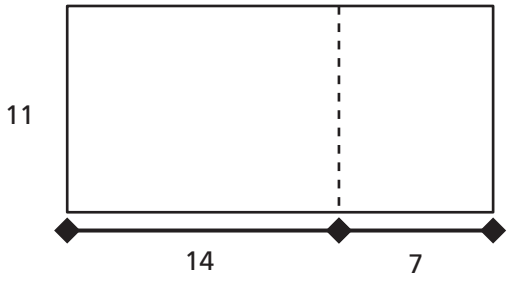
Name _____ Date _____ Class _____

Additional Practice: Digital Assessments

Investigation 4

Prime Time

11. Which of the following expressions represent the area of the larger rectangle? *Select all that apply.*



- ☐ $11 \times (14 + 7)$
- ☐ $2 \times 21 + 2 \times 11$
- ☐ $11 \times 14 \times 7$
- ☐ $11 \times 14 + 11 \times 7$
- ☐ 11×21

12. Jenna ran 3 miles a day for her first week of marathon training. For the next two weeks, she ran 4 miles each day. Assume Jenna ran 7 days a week.

Use the numbers and symbols provided to complete parts (a) and (b). Numbers and symbols may be used more than once.

2	3	4	5	12	14	49	56	77	168
			+		−		×		÷

a. Write a mathematical expression to represent the number of miles Jenna ran in her first 3 weeks of training.

b. Evaluate your expression to find the total number of miles Jenna ran.

13. Complete the statements below by circling the expressions or numbers that make each statement true.

$$6 \times (5 \times 5 - 1) - 4$$

To evaluate the expression above using the order of operations, first compute $\begin{bmatrix} 5 \times 5 \\ 5 - 1 \end{bmatrix}$.

Next compute $\begin{bmatrix} 5 \times 4 \\ 6 \times 5 \\ 25 - 1 \end{bmatrix}$.

The expression $6 \times (5 \times 5 - 1) - 4$ simplifies to $\begin{bmatrix} 116 \\ 140 \\ 149 \end{bmatrix}$.

Name _____ Date _____ Class _____

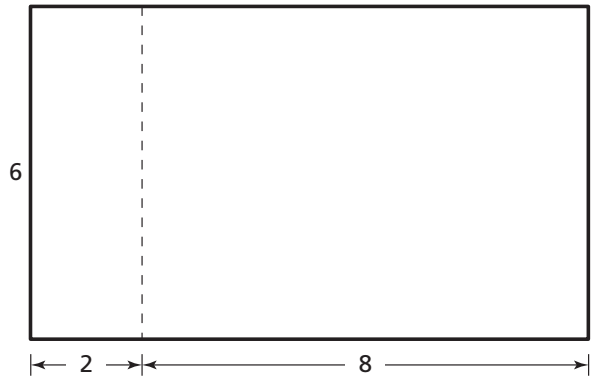
Skill: Areas of Rectangles

Investigation 4

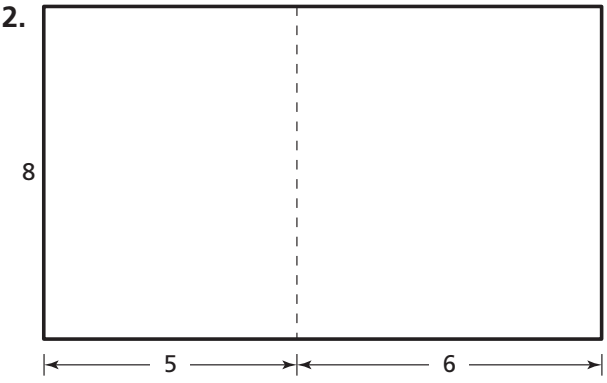
Prime Time

Write expressions for the area of each large rectangle in two different ways. Then find the area using each expression.

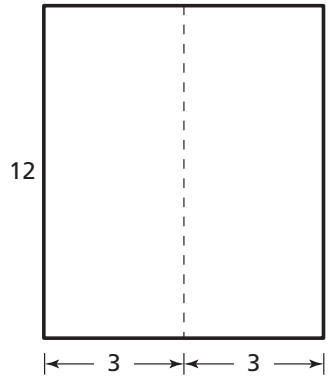
1.



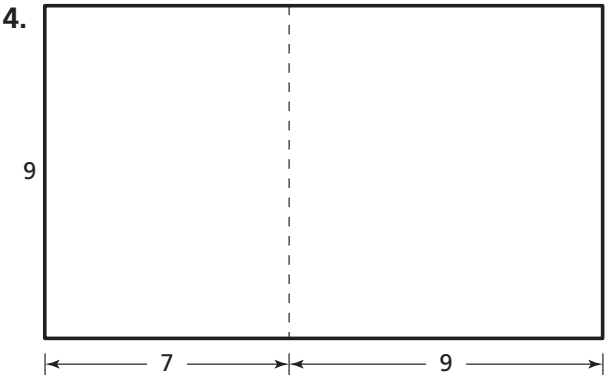
2.



3.



4.



Name _____ Date _____ Class _____

Skill: Order of Operations

Investigation 4

Prime Time

Use the Order of Operations to simplify each expression. Show your work.

1. $8 \div 1 + 7$

2. $9(6 + 6)$

3. $(12 - 3) \div 3$

4. $12 - 3 \div 3$

5. $8 \times (4 \times 4 - 6) - 8$

6. $8 \times 4 \times 4 - 6 - 8$

7. $112 - 21 \div 7$

8. $(112 - 21) \div 7$

9. $25 \times (10 - 7)$

10. $25 \times 10 - 7$

11. $(5 \times 3 + 1 - 6) \div 2$

12. $5 \times 3 + 1 - 6 \div 2$