NAME_____

Module 4 **Fractions, Decimals, Percents, and Factors**
Lesson 3 **Factors and Prime Factorization**

Independent Practice 4.3

Find the factors of each number.

1. 18
1, 2, 3, 6, 9, 18

2. 70
1, 2, 5, 7, 10, 14, 35, 70

Determine whether each number is prime or composite.

3. 41
prime

4. 49
composite

5. 33
composite

6. 17
prime

Find the prime factorization of each number.

7. 216
$2^3 \times 3^3$

8. 45
$3^2 \times 5$

9. 110
$2 \times 5 \times 11$

10. 200
$2^3 \times 5^2$

Find the common factors of each set of numbers.

11. 18 and 81
1, 3, 9

12. 100 and 250
1, 2, 5, 10, 25, 50

13. 8 and 28
1, 2, 4

14. 32 and 80
1, 2, 4, 8, 16

Find the Greatest Common Factor (GCF) of each set of numbers.

15. 24 and 64
8

16. 52 and 13
13

17. 96 and 120
24

18. 8, 40, 48
8

Use prime factorization to find the Greatest Common Factor (GCF) of each set of numbers.

19. 99 and 220
11

20. 36, 90, 180
18

Journal

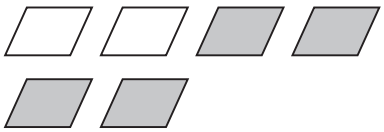
1. Explain why two is the only even prime number.
2. Explain how to find the prime factorization of 24 using a factor tree.
3. Explain how to find the prime factorization of 18 using a factor ladder.
4. Describe the steps needed to find the Greatest Common Factor of 24 and 18 using a Venn diagram.

Cumulative Review

1. Name the fraction shown by the shaded region.

$\frac{4}{7}$

2. What is the ratio of shaded quadrilaterals to the entire group of shapes? Express the ratio in all three ways.



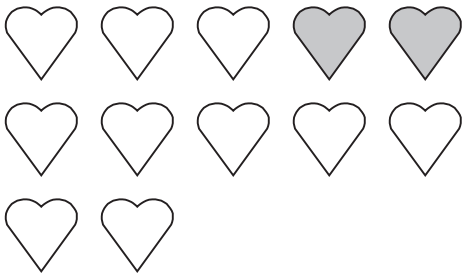
4:6 4 to 6 $\frac{4}{6}$

3. What is the ratio of small z's to large Z's? Express the ratio in all three ways.

Z Z Z Z z z z z z

5:4 5 to 4 $\frac{5}{4}$

4. What is the ratio of shaded hearts to the entire group of hearts? Express the ratio in all three ways.



2:12 2 to 12 $\frac{2}{12}$

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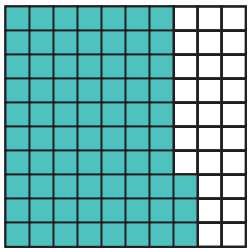
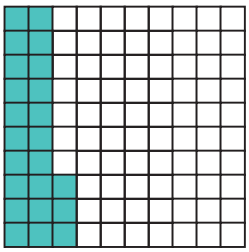
5. What fraction of the model is shaded?



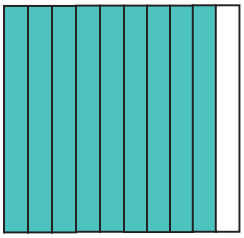
$\frac{73}{100}$

6. Write the fraction of the model that is shaded, the ratio of shaded squares to total squares, and the percent that is shaded.



$\frac{23}{100}$ **23 to 100** **23%**

7. Name the decimal shown by the shaded region. Write it in both decimal and word form.



0.9; nine tenths

8. Find the decimal equivalent of the fraction $\frac{12}{100}$.

0.12

9. Find the percent equivalent of the fraction.

$\frac{24}{100}$

24%

10. Complete the table.

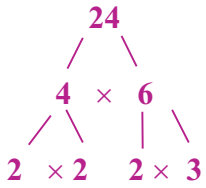
Fraction	Decimal	Percent
	0.92	

$\frac{92}{100}$ **92%**

Possible Journal Answers

1. **The only factors of two are one and two. Every even number greater than two has at least the factors of one, two, and the number itself.**

2. **I put 24 on top of my factor tree. I select the factors four times six as my next level. Four and six are composite. I put the factors of four, two times two, on the next level. On that same level, I put the factors of six, two times three. All the factors on this level are prime, so I have factored 24 into primes. The prime factorization of 24 is two times two times two times three.**



$24 = 2 \times 2 \times 2 \times 3$

3. **I put 18 on the top rung of the ladder. I put the prime factor two on the left-hand side of the next step down. Two times nine equals 18, so I put nine under the 18. Then since nine equals three times three, I put three on the left-hand side of the next step down, and I put the other three under the nine. Now, all my factors on the left side and the bottom of the ladder are prime. Therefore, 18 equals two times three times three.**

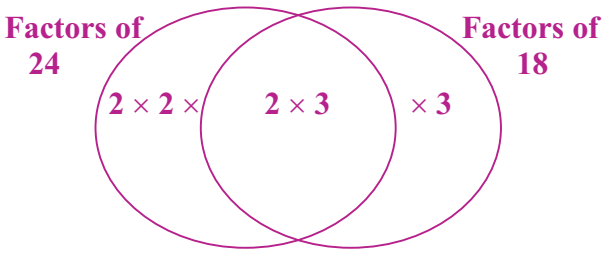
	18
2	9
3	3

$18 = 2 \times 3 \times 3$

4. To find the Greatest Common Factor of 18 and 24 using a Venn diagram, I have to factor 18 and 24 into primes first.

$$24 = 2 \times 2 \times 2 \times 3$$
$$18 = 2 \times \quad 3 \times 3$$

Now, I draw two circles. I labeled the circle on the left "Factors of 24" and the circle on the right "Factors of 18." I put the common prime factors in the intersection of the two circles. That is, two times three. I put two times two in the "Factors of 24" circle not in the intersection, and I put the factor three in the "Factors of 18" circle not in the intersection. The Greatest Common Factor of 18 and 24 is the product of the factors in the intersection of the circles.



GCF = 2 × 3 = 6