Lesson 5: Finding One Hundred Percent Given Another Percent

Classwork

Opening Exercise

What are the whole number factors of ? What are the multiples of those factors? How many multiples are there of each factor (up to )?

|  |  |  |
| --- | --- | --- |
| **Factors of** | **Multiples of the Factors of** | **Number of Multiples** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Example 1: Using a Modified Double Number Line with Percent**

The students who play wind instruments represent of the students who are in band. How many students are in band?

Exercises 1–3

1. Bob’s Tire Outlet sold a record number of tires last month. One salesman sold tires, which was of the tires sold in the month. What was the record number of tires sold?
2. Nick currently has points in his fantasy baseball league, which is more points than Adam. How many points does Adam have?
3. Kurt has driven miles of his road trip but has of the trip left to go. How many more miles does Kurt have to drive to get to his destination?

**Example 2: Mental Math Using Factors of**

Answer each part below using only mental math, and describe your method.

* 1. If is of a number, what is that number? How did you find your answer?
  2. If is of a number, what is that number? How did you find your answer?
  3. If is of a number, what is that number? How did you find your answer?
  4. If is of a number, what is that number? How did you find your answer?
  5. If is of a number, what is that number? How did you find your answer?

Exercises 4–5

1. Derrick had a batting average at the end of his last baseball season, which means that he got a hit of the times he was up to bat. If Derrick had hits last season, how many times did he bat?
2. Nelson used of his savings account for his class trip in May. If he used from his savings account while on his class trip, how much money was in his savings account before the trip?

Lesson Summary

To find of the whole, you can use a variety of methods, including factors of (, , , , , , , , and ) and double number lines. Both methods will require breaking into equal-sized intervals. Use the greatest common factor of and the percent corresponding to the part.

Problem Set

Use a double number line to answer Problems 1–5.

1. Tanner collected cans and bottles while fundraising for his baseball team. This was of what Reggie collected. How many cans and bottles did Reggie collect?
2. Emilio paid in taxes to the school district that he lives in this year. This year’s taxes were a increase from last year. What did Emilio pay in school taxes last year?
3. A snowmobile manufacturer claims that its newest model is lighter than last year’s model. If this year’s model weighs, how much did last year’s model weigh?
4. Student enrollment at a local school is concerning the community because the number of students has dropped to , which is a decrease from the previous year. What was the student enrollment the previous year?
5. The color of paint used to paint a race car includes a mixture of yellow and green paint. Scotty wants to lighten the color by increasing the amount of yellow paint . If a new mixture contains liters of yellow paint, how many liters of yellow paint did he use in the previous mixture?

Use factors of and mental math to answer Problems 6–10. Describe the method you used.

1. Alexis and Tasha challenged each other to a typing test. Alexis typed words in one minute, which was of what Tasha typed. How many words did Tasha type in one minute?
2. Yoshi is taller today than she was one year ago. Her current height is cm. How tall was she one year ago?
3. Toya can run one lap of the track in , which is of her younger sister Niki’s time. What is Niki’s time for one lap of the track?
4. An animal shelter houses only cats and dogs, and there are more cats than dogs. If there are cats, how many dogs are there, and how many animals are there total?
5. Angie scored points on a test but only received a grade on the test. How many points were possible on the test?

For Problems 11–17, find the answer using any appropriate method.

1. Robbie owns more movies than Rebecca, and Rebecca owns more movies than Joshua. If Rebecca owns movies, how many movies do Robbie and Joshua each have?
2. of the seventh-grade students have math class in the morning. of those students also have science class in the morning. If seventh-grade students have math class in the morning but not science class, find how many seventh-grade students there are.
3. The school bookstore ordered three-ring notebooks. They put of the order in the warehouse and sold of the rest in the first week of school. There are notebooks left in the store to sell. How many three-ring notebooks did they originally order?
4. In the first game of the year, the modified basketball team made of their foul shot free throws. Matthew made all of his free throws, which made up for of the team’s free throws. How many free throws did the team miss altogether?
5. Aiden’s mom calculated that in the previous month, their family had used of their monthly income for gasoline, and of that gasoline was consumed by the family’s SUV. If the family’s SUV used worth of gasoline last month, how much money was left after gasoline expenses?
6. Rectangle A is a scale drawing of Rectangle B and has of its area. If Rectangle A has side lengths of and , what are the side lengths of Rectangle B?

A

B

1. Ted is a supervisor and spends of his typical work day in meetings and of that meeting time in his daily team meeting. If he starts each day at 7:30 a.m., and his daily team meeting is from 8:00 a.m. to 8:20 a.m., when does Ted’s typical work day end?