

Scoring with Integers

Adding and
Subtracting
Integers

Steve is the quarterback for the Falcons, his school's football team. Football is a sport in which integers are important not just for keeping score but also for keeping track of yards lost and gained. Solve the following problems.



1 In the Falcons' first game of the season, they got the ball on their own 20-yard line. On their first play from scrimmage, they lost 3 yards. On the second play, they gained 2 yards. On the third play, they lost 5 yards. Write an integer to represent the total yardage gained or lost on these three plays.

On what yard line was the ball after these three plays?

2 Last year, Steve completed the longest pass of his career, gaining 32 yards. In the second quarter of his first game this year, Steve completed a pass that was only 3 yards short of his personal best last year. How many yards did this completed pass gain?

3 Bryan, one of Steve's friends, is a running back for the Falcons. During the game, Bryan ran the ball eight times and gained or lost the following yards: gained 2 yards, gained 6, lost 5, gained 17, gained 4, lost 2, gained 9, and gained 1.

How many yards did he gain in the game?

What was his average gain per run?

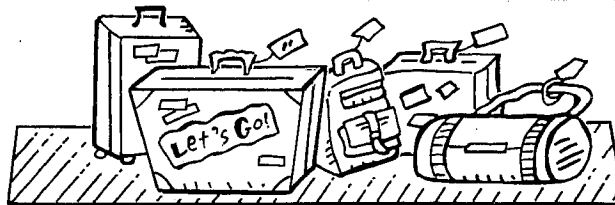
4 Eddie, another one of Steve's friends, is also a running back. Eddie ran the ball three times but lost a total of 7 yards. He also caught five passes, for an average gain of 4 yards per pass. Between pass catching and running, how many total yards did Eddie gain?

5 In the last quarter of the game, the score was tied. The Falcons were on the 50-yard line. (Remember that the distance from goal line to goal line on a football field is 100 yards.) In the final eight plays of the game, the Falcons gained or lost the following yards: gained 13 yards, lost 5, lost 3, gained 26, gained 3, lost 4, gained 14, and gained 6. Would they have scored a touchdown? Explain.

Class Trip to Disney World!

**Multiplying and
Dividing Integers**

Lucas is an eighth grader at Big River Middle School. Each May, the eighth-grade class goes on a three-day trip to Disney World. Solve the following problems.



1 The number of students going on the eighth-grade class trip has been decreasing at an average rate of 6 students per year for the last five years. Write an integer that represents the total decrease over this time period.

If at least 20 more students decide not to go, school officials are thinking of canceling the trip. If the current rate of decrease continues, in how many years may the trip be canceled?

2 Part of the reason for the decline in the numbers of students going on the trip is the increasing cost. The cost of the trip has been rising at an average rate of \$7 per year for the last five years. Write an integer that represents the total increase in costs over this time period.

If the cost of the trip five years ago was \$180, what is the current cost of the trip?

3 One of the ways the eighth grade helps to pay for the trip is to sell boxes of greeting cards and holiday wrapping paper. The cards cost \$3 per box and the wrapping paper costs \$6 per roll. Lucas

sold several boxes of cards and several rolls of wrapping paper. When it came time to turn in the money for his orders, two people owed him money for 1 box of cards each, and three people owed him money for 1 roll of wrapping paper each. In relation to the money Lucas collected, write an integer that represents the total money he was still owed.

4 Lucas borrowed \$80 from his mother to help pay for his trip. To repay the loan, he plans to pay her \$16 each month from the money he earns at his part-time job. How much money will Lucas owe his mother after two months of payments?

5 Although the number of students going on the eighth-grade trip has been decreasing at an average rate of 6 students per year for the last five years, the overall class size has stayed about 120 students. For each of the next five years, the school board projects an average increase of about 10% per year in the number of students in eighth grade. How might an increase in the number of eighth graders affect the decreasing number of students going on the class trip? Explain your answer on the back of this page.