You have worked with whole numbers, fractions, and decimals in earlier units. In this Unit, you will work with integers. **Integers** are the set of whole numbers, their opposites, and zero. Integers and fractions, (and their equivalent decimals), are called *rational* numbers.

Problem 1.1 involves a game with positive and negative scores. As you work through the Problem, think about which operations you use to keep track of the scores. Notice how the score goes higher or lower depending on whether a team answers a question correctly or incorrectly.

1.1 Playing Math Fever

Using Positive and Negative Numbers

Ms. Bernoski's math classes often play Math Fever, a game similar to a popular television game show. The game board is shown. Below each category name are five cards. The front of each card shows a point value. The back of each card has a question related to the category. Cards with higher point values have more difficult questions.

Math Fever

Operations With Fractions	Similarity	Probability	Area and Perimeter	Tiling the Plane	Factors and Multiples
50	50	50	50	50	50
100	100	100	100	100	100
150	150	150	150	150	150
200	200	200	200	200	200
250	250	250	250	250	250

Math Fever is played in teams. One team starts the game by choosing a card. The teacher asks the question on the back of the card. The first team to answer the question correctly gets the point value on the card. The card is then removed from the board. If a team answers the question incorrectly, the point value is subtracted from their score. The other teams may then try to answer the question. The team that answers correctly chooses the next card.

Problem 1.1

A At one point in a game, the scores are as follows:

Super Brains	Rocket Scientists	Know-It-Alls
⁻300	150	⁻500

1. Which team has the highest score? Which team has the lowest score? Explain how you decided.
2. Find the difference in points for each pair of teams.
3. Use *number sentences* to describe two possible ways that each team reached its score.

B The current scores are ⁻300 for Super Brains, 150 for Rocket Scientists, and ⁻500 for Know-It-Alls.

1. Write a number sentence to represent each sequence of points. Start with the current score for each team.

a. **Super Brains**

Point Value	Answer
200	Correct
150	Incorrect
50	Correct
50	Correct

b. **Rocket Scientists**

Point Value	Answer
50	Incorrect
200	Incorrect
100	Correct
150	Incorrect

c. **Know-It-Alls**

Point Value	Answer
100	Incorrect
200	Correct
150	Incorrect
50	Incorrect

2. At this point in the game, which team has the highest score? Which team has the lowest score?
3. Find the difference in points for each pair of teams.

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Problem 1.1 continued

C The number sentences below describe what happens at a particular point during a game of Math Fever. For each number sentence:

- Find the missing number.
- Explain what the sentence tells about a team's performance and overall score.

1. BrainyActs: $^-200 + 150 - 100 = \square$
2. Xtremes: $450 - 300 = \square$
3. ExCells: $300 - 450 = \square$
4. AmazingMs: $^-350 + \square = {}^-150$

D Sam forgot to record a score. Sam wrote this number sentence:

$$^-350 + \square = {}^-450$$

What score goes in the box?

E 1. Find three different pairs of numbers that have a sum of $^-150$.

$$\square + \square = {}^-150$$

2. Does the order of the addends matter? Explain your reasoning.

F Luisa answers a 300-point question correctly and a 400-point question incorrectly. Luisa and Sam use different methods to keep score:

Luisa's Method		Sam's Method
$300 - 400 = {}^-100$	OR	$300 + {}^-400 = {}^-100$

Who is correct? Which methods work for other pairs of scores? Explain your reasoning.

ACE Homework starts on page 20.