

2.22

Word Problem with Linear Inequalities

• Example 1

Mohammed needs a mean score of 92 or higher on four tests to get an A. So far his scores are 94, 89, and 88. What score on the fourth test will get him an A?

Let x represent Mohammed's fourth-test score.

Mohammed's mean score is $\frac{94 + 89 + 88 + x}{4}$. He will get an A if this mean score is at least 92, that is if

$$\frac{94 + 89 + 88 + x}{4} \geq 92$$

First, multiply both sides by 4.

$$94 + 89 + 88 + x \geq 368$$

Then add the test scores.

$$271 + x \geq 368$$

Subtract 271 from both sides.

$$x \geq 97$$

To get an A, Mohammed needs a minimum score of 97 on the fourth test.

To check the solution, we find the mean of the four test scores, 94, 89, 88, and 97.

$$\frac{94 + 89 + 88 + 97}{4} = \frac{368}{4} = 92$$

● ● ● CHECK YOURSELF 1

Felicia needs a mean score of at least 75 on five tests to get a passing grade in her health class. On her first four tests she has scores of 68, 79, 71, and 70. What score on the fifth test will give her a passing grade?

● ● ● CHECK YOURSELF ANSWER

1. 87 or greater.

2.22 Exercises

Name _____

Section _____

Date _____

A N S W E R S

1. _____

2. _____

3. _____

4. _____

Solve the following word problems. Be sure to show the inequality you use for the solution.

1. Test scores. To pass a course with a grade of B or better, Liza must have an average of 80 or more. Her grades on three tests are 72, 81, and 79. Write and solve an inequality representing the score that Liza must get on the fourth test to obtain a B average or better for the course.

2. Test scores. Sam must have an average of 70 or more in his summer course in order to obtain a grade of C. His first three test grades were 75, 63, and 68. Write and solve an inequality representing the score that Sam must get on the last test in order to get a C grade.

3. Test scores. Kofi must have an average that is at least 80 in order to obtain a grade of B. His grades on four tests are 74, 86, 91, and 69. Write and solve an inequality representing the score that Kofi must get on the last test in order to get a B grade.

4. Test scores. To get a grade of A in a course, Ingrid must have an average of 90 or more. Her grades on two tests are 84 and 92. Write and solve an inequality representing the score that Ingrid must get on the third test to have an A average in the course.