NAME

Module 5 Solving Linear Inequalities of One Variable

Lesson 7 Solving Problems Using Inequalities of One Variable

independent practice

Solve each problem.

1. A number, *x*, decreased by 5 is no more than 0. What are the possible values of the number?

$x \leq 5$ **The number is less than or equal to five.**

2. Jeb must spend at least $97.50 on identical awards for 15 community volunteers. What is the least he can spend on each award?

$x \geq \$6.50$ **Jeb must spend at least $6.50 on each award.**

3. Each of seven members of the 4-H club raised equal amounts of money to attend the county fair. In all, the members raised over $630. How much did each individual member raise?

$m > 90$ **Each member raised over $90.**

4. Dot Common, a computer tutoring service, charges $10 to come to a customer's home and $14 per hour to show customers how to use their computer. If a customer must spend less than $55.50 on a single visit from Dot Common, how many hours of help can she receive?

$h < 3.25$ **She can pay for less than 3.25 hours of help.**

5. Giselle pays 30% of her weekly salary in taxes. She earns more than $385 each week after taxes are taken from her paycheck. What is the minimum amount Giselle earns in a week **before** taxes are taken away?

$x > 550$ **Giselle earns more than $550 each month.**

6. Many merchants require a minimum value for purchases made with credit cards because of the fees stores pay to credit card companies. If the items in a store are marked up 45% and the store requires a minimum of a $5.00 for credit card purchases, what is the minimum wholesale cost of an item that can be purchased with a credit card?

$p \geq 3.45$ **The minimum wholesale price is $3.45.**

7. The length of a rectangle is twice the width of the rectangle. If the perimeter of the rectangle is no more than 15 mm, what is the greatest measure of the **length** of the rectangle?

The length of the rectangle must be less than or equal to 2.5 mm.

8. The sum of two consecutive integers is greater than the smaller integer increased by 10. What are the possible values for the **smaller** integer?

The smaller integer must be greater than 9.

Journal

1. Explain why the symbol "$<$" would not be used to model the following: John chose five less than y apples.
2. Write a problem that can be solved with the inequality: $0.25x < 500$.
3. Newt solved an inequality to answer a question about the maximum amount that a student would need to score on a test so that her average test score was not greater than 92. The answer to the equation was $s > 88$. Newt concluded that the student needed to score at least 88 points on her next test. Explain the error.
4. How would the answer to question 7 in the first section of this Independent Practice change if "no more than" was changed to "at least"?
5. Write an inequality that has no solution.

Cumulative Review

Simplify each expression.

1. 5^2 **25**

2. $\sqrt{121}$ **11**

3. $\sqrt[3]{-125}$ **–5**

4. $(-4)^3$ **–64**

5. $\sqrt{-16}$ **undefined**

6. 1^{87} **1**

7. $(-10)^2$ **100**

8. $-\sqrt{36}$ **–6**

9. k^0 **1**

10. $\left(\frac{2}{3}\right)^3$ **$\frac{8}{27}$**

Possible Journal Answers
1. **Here "less than" means subtraction. You are told that John chose 5 less than y apples. John chose $y - 5$ apples.**
2. **A retailer has a shipment of shirts and there is a 25% markup on these items. The markup value is less than \$500. What is the most he paid for the shipment of shirts? x is less than 2,000. At most he paid \$2,000 on the shipment of shirts.**
3. **The original question asked Newt to find the maximum score such that the average would not exceed 92. Newt's solution relates how to get more than a 92 average. The answer should be written $s < 88$.**
4. **Instead of the length in rectangle being less than or equal to 2.5 mm the length would be greater than or equal to 2.5 mm.**
5. **A possible answer would be $5x - 3 > 5x + 7$.**