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**Module 5** Solving Linear Inequalities of One Variable  
**Lesson 7** Solving Problems Using Inequalities of One Variable



**additional  
practice**

Solve.

- A number,  $n$ , decreased by 12 is less than  $-7$ . What are the possible values of the number?  
 $n < 5$  The number is less than five.


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- A number,  $j$ , divided by 10 is greater than 2. What are the possible values of the number?  
 $j > 20$  The number is greater than twenty.


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- Clara can invite at most 75 people to a party. She has invited 21 people from her Girl Scout Troop. How many more people can Clara invite?  
 $p \leq 54$  Clara can invite no more than 54 more people.


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- Xavier earned no more than \$1000 last week. If he earns a base pay of \$400 each week as well as a commission of 12% of all sales he makes, what is the greatest possible value of the merchandise he sold?  
 $c \leq 5,000$  Xavier sold no more than \$5,000 worth of merchandise.


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- Ferd pays 25% of his monthly salary in taxes. Ferd earns at least \$675 each month after taxes are taken from his paycheck. What is the minimum amount Ferd earns in a month **before** taxes are taken away?  
 $m \geq 900$  Ferd earns at least \$900 each month before taxes.


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- The perimeter of a triangular garden can be no more than 75 meters. Two sides of the garden are 33 meters long. What is the longest possible length for the third side?  
 $s \leq 9$  The longest possible length for the third side is 9 meters.


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- The sum of three consecutive even integers is no less than 42. What are the least possible values for the integers?  
The least possible values are 12, 14, and 16.


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- A pitcher holds 24 oz. of a punch that contains 10% orange juice. What is the minimum amount of pure orange juice that must be added to the punch so that it contains at least 20% orange juice?  
You should add at least 3 oz. of pure orange juice.


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9. At noon, Shelby leaves her house and drives 50 mph to her grandmother's house. Her brother, Swayze, leaves at 12:30 P.M. and drives 55 mph. What is the maximum length of time after Shelby leaves that Shelby is at least 15 miles ahead of Swayze?
10. The measure of angle  $A$  is equal to  $p + 60$  degrees while the measure of angle  $B$  is equal to  $p - 25$  degrees. If the sum of the measures of the two angles is more than 135 degrees, what are the possible measures of angle  $B$ ?

**The maximum length of time is 2.5 hours.**

**The measure of angle  $B$  is greater than 25 degrees.**

11. According to a recent survey, 48% of the citizens in a town are in favor of building a children's museum. If at least 16,200 citizens are in favor of building the museum, what is the smallest possible number of people that live in the town?
12. A package can be at most 100 lbs. to be shipped by Speed-E Mail. What is the minimum amount of weight that must be removed from a 150 pound package so that it can be shipped by Speed-E Mail?

**The town must have 33,750 citizens.**

**The minimum weight that must be removed is 50 pounds.**

13. According to some dietary guidelines, no more than 30% of the calories a person consumes should be from fat. If each fat gram contains 9 calories, what is the maximum number of grams of fat that should be consumed in 1,800 calorie diet?
14. Jose earns \$12.75 per hour. Each month he pays 20% of his salary in taxes and a set fee of \$50 for insurance. What is the minimum number of hours Jose needs to work so that his pay after taxes and insurance is at least \$866 per month?

**The most that can be consumed is 60 g of fat.**

**Jose must work at least 80 hours.**

15. Kyle pays \$20 each month for a membership to a gym, and he pays \$40 per hour for personal training from a gym expert. If Kyle can spend no more than \$110 in a month on gym fees, what is the greatest number of hours of personal training he can receive?
16. Each bus that takes members of the pep rally club to football games can hold 24 students. The number of club members that drive themselves to games is 350. If over 500 students will attend the football game, what is the minimum number of buses needed?

**Kyle can pay for at most 2.25 hours of training.**

**$b > 6.25$  The club needs 7 buses.**

17. Angle  $C$  is an obtuse angle whose measure is 6 more than 3 times the measure of angle  $D$ . What are the possible values for the measure of angle  $D$ ?

**The measure of angle  $D$  must be greater than 28 degrees.**

19. The sum of a number,  $m$ , and 50 is less than 50. What are the possible values for the number?

**$m < 0$  The number must be less than zero.**

18. At a recent 5K run, 40% of the runners received t-shirts. The race had 300 runners who registered before the day of the race, and a number of runners that registered the day of the race. If the number of t-shirts given to runners was no less than 180, what is the minimum number of runners that registered the day of the race?

**The minimum number of runners that registered the day of the race is 150.**

20. Three friends raced as a team in a mountain bike race. They finished in consecutive order. Their team score was found by adding their finishing place. If the team score was more than 18, what was the best possible place for any member of the team?

**The best possible finish for any team member was 6th place.**

