Practice 4.5

Solve. Show your work.

1. The perimeter of an equilateral triangle is at most 45 centimeters. Find the possible length of each side.
   \[ x + x + x \leq 45 \]
   \[ 3x \leq 45 \]
   \[ x \leq 15 \]

   At most, each side measures 15 cm.

2. Roger scored 1,800 points in four rounds of a debate competition. His opponent, Sawyer, scored 324 points in the first round, 530 points in the second round, and 619 points in the third round. How many points must Sawyer score in the final round to surpass Roger's score?
   \[ 324 + 530 + 619 + p > 1800 \]
   More than 327 pts.

3. Ben plans to sign up for a language class that will cost at least $195. His father gives him $75 and he earns $28 from mowing the lawn for his neighbors. Write and solve an inequality to find out how much more money he needs to save before he can sign up for the class.
   \[ 75 + 28 + x \geq 195 \]
   At least $92.
4 In her last basketball game, Casey scored 46 points. In the current game, she has scored 24 points so far. How many more two-point baskets must she make if she wants her total score in her current game to be at least as great as her score in the last game?

\[24 + 2x \geq 46\]

At least 11.

5 At Middleton Middle School, Marianne must score an average of at least 80 points on 4 tests before she can apply for the scholarship. If she scored 79, 81, and 77 for the first three tests, what must she score on her last test?

\[
\frac{79 + 81 + 77 + x}{4} \geq 80
\]

She must score a minimum of 83.
At the movies, a bag of popcorn costs $3.50 and a bottle of mineral water costs $2.75. If Madeline has $18 and bought only 2 bottles of water, how many bags of popcorn can she buy at most?

\[2(2.75) + 3.50p \leq 18\]

At most 3 bags.

Party favors are on sale for $2.40 each. You have $380 to spend on the decorations and gifts, and you have already spent $270 on decorations. Write and solve an inequality to find the number of party favors you can buy.

\[270 + 2.40x \leq 380\]

At most, 45 favors.
Charlie wants to join a golf club. He finds two clubs that have fees as shown in the table.

<table>
<thead>
<tr>
<th>Golf Club A</th>
<th>Golf Club B</th>
</tr>
</thead>
<tbody>
<tr>
<td>$80 new membership fee plus $45 per month</td>
<td>$110 new membership fee plus $30 per month</td>
</tr>
</tbody>
</table>

After how many months will Golf Club B be less expensive than Golf Club A?

\[80 + 45m > 110 + 30m\]

After 2 months.
9 Molly can either take her lunch or buy it at school. It costs $1.95 to buy lunch. If she wants to spend no more than $30 each month, how many lunches can she buy at most?

\[ 1.95x \leq 30 \]

At most, 15 lunches.

10 Tyson always likes to have at least $150 in his savings account. Currently he has $800 in the account. If he withdraws $35 each week, after how many weeks will the amount in his savings account be less than $150?

\[ 800 - 35x < 150 \]

After 9 weeks.

11 A cab company charges $0.80 per mile plus $2 for tolls. Melissa has at most $16 to spend on her cab fare. Write and solve an inequality for the maximum distance she can travel if she has at most $16 for cab fare. Can she afford to take a cab from her home to an airport that is 25 miles away?

\[ 2 + 0.8x \leq 16 \]

No—the most she can travel is 17.5 miles.
12 Nine subtracted from four times a number is less than or equal to fifteen. Write an inequality and solve it.

\[ 4x - 9 \leq 15 \]
\[ x \leq 6 \]

13 Sixteen plus five times a number is more than the number minus eight. Write an inequality and solve it.

\[ 16 + 5x > x - 8 \]
\[ x > -6 \]

14 **Math Journal** Write a word problem that can be solved using an inequality. Write the inequality that represents your problem. Then solve it.