

Unit 6: Inequalities

Name Key

Lesson 6: Solving Story Problems Using Inequalities

Use an inequality to solve each problem.

1. The ninth grade class at SHS is having a fundraiser. They need to raise at least \$1,500. They are selling magazines for \$7 each. How many subscriptions does that class need to sell to meet their fundraising goal?

$$7m > 1,500$$

$$\frac{7m}{7} > \frac{1500}{7}$$

$$m > 214.3$$

They must sell at least 215 magazines.

2. Alaina can spend no more than \$28 on iTunes downloads. Each song download costs \$1.29 and it costs \$9.99 to download an entire album. Alaina wants to download the newest Michael Buble album. How many individual songs can she download after she downloads the album?

$$1.29x + 9.99 \leq 28$$

$$1.29x + 9.99 - 9.99 \leq 28 - 9.99$$

$$\frac{1.29x}{1.29} \leq \frac{18.01}{1.29}$$

$$x \leq 13.9$$

She is able to download 13 songs.

3. Nicholas wants to go on his class trip to New York City. If Nicholas earns \$8 per hour babysitting, how many hours does he need to babysit in order to raise at least the \$500 needed for the trip?

$$8h \geq 500$$

$$\frac{8h}{8} \geq \frac{500}{8}$$

$$h \geq 62.5$$

He needs to babysit at least 62.5 hours

4. Sammy has \$2,450 in his bank account. He spends \$20 each week on gas money. After how many weeks will Sammy's account balance fall below \$1,000?

$$2,450 - 20w < 1000$$

$$2,450 - 20w - 2,450 < 1000 - 2,450$$

$$\frac{-20w}{-20} < \frac{-1450}{-20}$$

$$w > 72.5$$

His account will fall below \$1000 after 72.5 weeks

5. Kim and Kelley are saving for their annual vacation. They are going to Hawaii and their plane tickets cost \$2,418 total. They have saved \$1,804 so far. If they are able to save \$55 per week, how many weeks of saving will it take before they have saved at least \$2,418?

$$1804 + 55w - 1804 \geq 2418 - 1804$$

$$\frac{55w}{55} \geq \frac{614}{55}$$

$$w \geq 11.2$$

It will take them 12 weeks to save enough

6. Allie has at most \$30 to spend at the greenhouse on flowers for her summer garden. Impatiens cost \$2 each and coneflowers are \$3 each. If Allie buys 8 impatiens, how many coneflowers can she afford?

$$\begin{aligned} 2i + 3c &\leq 30 \\ 2(8) + 3c &\leq 30 \\ 16 + 3c - 16 &\leq 30 - 16 \\ 3c &\leq 14 \\ \frac{3c}{3} &\leq \frac{14}{3} \\ c &\leq 4.\bar{6} \end{aligned}$$

Allie can afford to buy 4 coneflowers

7. Dominic mows lawns and cleans pools during the summer. He earns \$20 per lawn and \$9 per pool. He needs \$1,500 to buy a car from his friend. If Dominic plans to mow 41 lawns this summer, how many pools must he clean to earn at least \$1,500?

Dominic must clean at least 76 pools

$$\begin{aligned} 20l + 9p &\geq 1500 \\ 20(41) + 9p &\geq 1500 \\ 820 + 9p - 820 &\geq 1500 - 820 \\ 9p &\geq 680 \\ \frac{9p}{9} &\geq \frac{680}{9} \\ p &\geq 75.5 \end{aligned}$$

8. Stonebridge Golf Course charges \$22 per round of golf. You can either rent golf clubs at the course for \$8 or you can buy your own set of clubs for \$160. How many rounds of golf would you need to play in order for the cost of purchasing clubs to be less than the cost of renting clubs?

Hint: You must rent them every time you play

Rent	>	Buy
$22x + 8x$		$22x + 160$
$30x - 22x$	\geq	$22x + 160 - 22x$
$8x$	\geq	160
x	\geq	20

You'd have to play more than 20 rounds of golf.

9. While vacationing in Florida, your family decides to go parasailing. Key Largo Parasail charges a \$50 deposit and \$3.50 for each minute. Carriibbean Watersports charges \$6 per minute with no deposit. How long do you have to parasail before the cost of Key Largo Parasail is less than the cost of Carriibbean Watersports?

More than 20 minutes before Key Largo is cheaper

Key Largo	<	Carriibbean Watersports
$50 + 3.50x$		$6x$
$50 + 3.50x - 3.50x$	$<$	$6x - 3.50x$
50	$<$	$2.5x$
$\frac{50}{2.5}$		$\frac{2.5x}{2.5}$
20	$<$	x

10. Benjamin can spend no more than \$40 on school supplies. He decides to buy a ream of paper for \$3.98 and spend the rest of his money on 3-ring binders that cost \$3.75 each. How many binders can Benjamin buy?

$$\begin{aligned} 3.98 + 3.75x - 3.98 &< 40 - 3.98 \\ 3.75x &< 36.02 \\ \frac{3.75x}{3.75} &< \frac{36.02}{3.75} \\ x &< 9.61 \end{aligned}$$

He can buy 9 binders