

Algebra 1

2. One-Variable Inequalities

2.4 Analyzing One-Variable

Inequalities in Context

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Exercises

Find all solutions to exercises via https://mathleaks.com/study/analyzing_one-variable_inequalities_in_context or scan the QR code

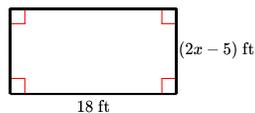


- 1.1** Write the sentence “A number x is less than 8 and greater than 3” as an inequality. Then, graph the inequality.
- 1.2** The family Humphrey is going on vacation in Florida. They have a 250 miles drive there and the hotel they are staying at is closing in 5 hours. Describe the average speed they have to hold to get there before the hotel close.
- 1.3** The body temperature of a human is 37°C and we are very sensitive for fluctuations. The camel has the same normal body temperature but it can differ from 3°C less to 3°C above without any affect. Write an inequality for the body temperature x a camel can have.
- 1.4** If a camel doesn't get water for two weeks, its body temperature can rise above 104°F .
- A** Represent a camel's body temperature t when it hasn't drank for two weeks.
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- B** Rewrite the inequality with Celsius instead of Fahrenheit.

1.5 An isosceles triangle is a triangle where two of the sides have equal length. If the sides with equal length are 5 cm each and the perimeter should be less than or equal to 12 cm, what can we say about the length of the last side?

1.6 Cliff lives in L.A. with his dog Brandy. Brandy weighs 80 pounds. Last week a vet told Cliff that a healthy weight for the dog is less than 65 pounds. If Brandy can lose an average of 1.25 pounds per week by sticking to the diet recommended by the vet, after how long will the dog weigh less than 65 pounds?

1.7 The area of the rectangle is greater than 270 square feet. Write and solve an inequality to find the possible values of x .



1.8 Belinda's mother has given Belinda \$7.50 to spend on a sundae. A sundae costs \$3.65 plus \$0.85 per topping. Belinda wants to know how many toppings she can buy. Help her by writing and solving an inequality describing the situation.

1.9 The drama class at Maurice Richard's High School in San Bernardino, CA is next week going to perform the comedy *These Pizzas are made in Heaven*. They are going to donate the profits from the performance to help rebuild the local library which burnt down last year. Each ticket cost \$10. They also received donations from local businesses of \$470.

A Write an inequality that describes how many tickets they need to sell to raise at least \$2500 and then solve the inequality.

B Graph the solution.

- 1.10** Calverton River Campgrounds charges an \$85 membership fee plus \$40 per night. Shawnee Lake Campgrounds charges a \$25 membership fee plus \$52 per night. How many nights do you have to stay to make Calverton River Campgrounds the cheaper option?
- 2.1** Write the sentence "A number x is less than or equal to -5 or greater than 11" as an inequality. Then, graph the inequality.
- 2.2** Juanita is internet shopping for DVDs and CDs. She has \$60 to spend and wants to buy Die Hard 3 on DVD. How many CDs can she then afford if they cost \$9.99 each and the shipping cost is \$12.5.
- 2.3** Juanita is back on her shopping spree! Now she is looking for a digital camera in the price range between \$100 and \$250.
- A** This time Juanita has a coupon for 10 % off. Describe the price range for the camera after the coupon is used.
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- B** When Juanita reads that they add a 6 % tax on the price she is shocked. What is the new range that she can buy a camera for after the tax is added?
- 2.4** In a city there are two car rental companies. If you rent a car from Company A, you pay \$25 as a starting fee, and then \$3 per mile. Company B offers a lower starting fee, \$10, but has a higher cost per mile, \$5/mile. How many miles would you have to drive in order for the total price to be higher when using Company B than Company A? Solve the exercise using an inequality.

2.5 Hiring an electrician from a particular company will cost \$25 an hour. In addition, you pay a starting fee of \$10. In another company the starting fee is \$50 and then \$15/hour. When is it less expensive to hire the first company? Solve the exercise with an inequality.

2.6 The base of a triangle is 14 ft and its height is $(x + 5)$ ft. What integer values are possible for x if the triangle's area is 70 ft^2 or less?

2.7 Patricia is selling gift cards to raise money for *Happy Paw*, the local cat shelter. She can earn prizes depending on how many cards she sells.

Cards	Prize category
1 – 20	<i>A</i>
21 – 40	<i>B</i>
41 – 60	<i>C</i>
61 – 80	<i>D</i>
+81	<i>E</i>

So far, she has sold 44 cards. How many more cards does Patricia need to sell to earn a prize in category D? Write your answer as a compound inequality, using x as the number of cards.

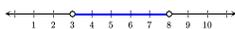
2.8 The streaming service Webbflex has a trial membership that gives you \$25 discount each month. Regular customers can chose to pay \$100 for 3 months. Less than how many dollars must the monthly cost be in order to make the trial membership profitable?

- 2.9** The company *SkiBee* rents out skies in heights between 150 and 220 cm. They recommend their customers to chose skies that are 1.16 times their own height. Describe the height x of a person that can't rent skies from SkiBee.
- 3.1** On the last two mathematics tests Henrietta scored 43 and 47. Help Henrietta find out what she needs to score on the next test to get an average test score between 45 and 50, inclusive.
- 3.2** One of the lakes with the highest salinity in the world is Lake Retba in Senegal. The salinity of the water there is considered normal if the average of three readings is between 38.2 % and 40.1 %, inclusive. When the salinity was measured today two readings were 37.3 % and 39.6 %. What possible values for the third reading, p , will make the salinity normal?

Answers

2.4 Analyzing One-Variable Inequalities in Context

1.1 $3 < x < 8$



1.2 $s \geq 50$ mph

1.3 $34^\circ\text{C} \leq x \leq 40^\circ\text{C}$

1.4 **A** $t > 104^\circ\text{F}$

B $t > 40^\circ\text{C}$

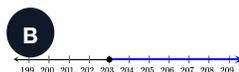
1.5 The length of the remaining side must be greater than 0 cm and less than or equal to 2 cm.

1.6 More than 12 weeks.

1.7 $x > 15$

1.8 4

1.9 **A** At least 203 tickets.



1.10 More than 5 nights.

2.1 Inequality: $x \leq -5$ or $x > 11$

Graph:



2.2 Juanita can buy 3 CDs at most.

2.3 **A** $\$90 < x < \225

B $\$95.85 < x < \239.63

2.4 7.5

2.5 When the job takes less than 4 hours

2.6 $-4, -3, -2, -1, 0, 1, 2, 3, 4, \dots$

2.7 $17 \leq x \leq 36$

2.8 $x < \$58$

2.9 $x < 129.3$ cm or $x > 189.6$ cm

3.1 $45 \leq x \leq 60$

3.2 $37.7\% \leq p \leq 43.4\%$