HOMEWORK/CLASSWORK FOR Solving Inequalities Word Problems

Real-World Connection

Normal blood pressure for teens is about 110/70.

52. Expenses The sophomore class is planning a picnic. The cost of a permit to use a city park is $250. To pay for the permit, there is a fee of $.75 for each sophomore and $1.25 for each guest who is not a sophomore. Two hundred sophomores plan to attend. Write and solve an inequality to find how many guests must attend for the sophomores to pay for the permit.

53. Health Care Systolic blood pressure is the higher number in a blood pressure reading. It is measured as your heart muscle contracts. The formula $P \leq \frac{1}{2}a + 110$ gives the normal systolic blood pressure P based on age a.

a. At age 20, does 120 represent a maximum or a minimum normal systolic pressure?

b. Find the normal systolic blood pressure for a 50-year-old person.

Match each inequality with its graph below.

54. $-2x - 2 > 4$

55. $2 - 2x > 4$

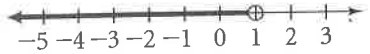
56. $2x + 2 > 4$

57. $2x + 2 > 4x$

58. $2x - 2 > 4$

59. $-2(x - 2) > 4$

A.



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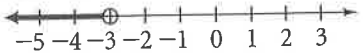

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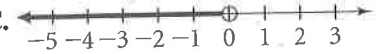

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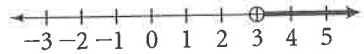

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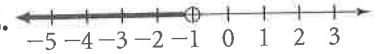

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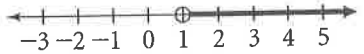


60. Open-Ended Write two different inequalities that you can solve by adding 5 and multiplying by −3. Solve each inequality.

Solve each inequality. Choose odds or evens for 61-76

61. $\frac{4}{3}r - 3 < r + \frac{2}{3} - \frac{1}{3}r$

62. $4 - 2m \leq 5 - m + 1$

63. $-2(0.5 - 4s) \geq -3(4 - 3.5s)$

64. $\frac{1}{2}n - \frac{1}{8} \geq \frac{3}{4} + \frac{5}{6}n$

65. $-(8 - s) < 0$

66. $3.8 - k \leq 5.2 - 2k$

67. $10 > 3(2n - 1) - 5(4n + 3)$

68. $3(3r + 1) - (r + 4) \leq 13$

69. $2(3x + 7) > 4(7 - 2x)$

70. $4(a - 2) - 6a \leq -9$

71. $4(3m - 1) \geq 2(m + 3)$

72. $17 - (4k - 2) \geq 2(k + 3)$

73. $2n - 3(n + 3) \leq 14$

74. $5x - \frac{1}{2}(3x + 8) \leq -4 + 3x$

75. $5a - 2(a - 15) < 10$

76. $5c + 4(c - 1) \geq 2 + 5(2 + c)$

77. Business Mandela is starting a part-time word-processing business out of his home. He plans to charge $15 per hour. The table at the right shows his expected monthly business expenses. Write and solve an inequality to find the number of hours he must work in a month to make a profit of at least $600.

Expense	Cost
Equipment rental	$490
Materials	$45
Business phone	$65

78. Commission Joleen is a sales associate in a clothing store. Each week she earns $230 plus a commission equal to 3% of her sales. This week her goal is to earn no less than $460. Write and solve an inequality to find the dollar amount of the sales she must have to reach her goal.

DUE: Do both sides. Show all work on loose leaf for credit (neatly, numbered). Write answers on here.

81 & 83 are EXTRA CREDIT!!

Error Analysis **Find and correct the mistake in each of the following.**

79.

$$3x + 3 \leq -2x + 5$$
$$3x \leq -2x + 2$$
$$x \leq 2$$

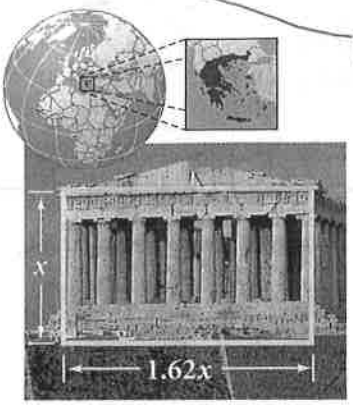
80.

$$4(n + 2) > 3n + 1$$
$$4n + 2 > 3n + 1$$
$$4n > 3n - 1$$
$$n > -1$$

Challenge

81. **a.** Solve $ax + b > c$ for x, where a is positive.
b. Reasoning Solve $ax + b > c$ for x, where a is negative.

82. Geometry The base of a triangle is 10 in. Its height is $(x + 4)$ in. Its area is no more than 56 in.^{2}. What are the possible integer values of x?

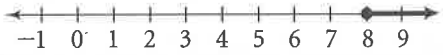


Real-World Connection

The Parthenon, an ancient Greek temple, has dimensions that form a golden rectangle.

83. Architecture The rectangle shown on the building at the left is a golden rectangle. Artists often use the golden rectangle because they consider it to be pleasing to the eye. The ratio of two sides of a golden rectangle is approximately 1 : 1.62. Suppose you are making a picture frame in the shape of a golden rectangle. You have a 46-in. length of wood to use for a frame. What are the dimensions of the largest frame you can make? Round to the nearest tenth of an inch.

84. Critical Thinking Find a value of a such that the number line below shows all the solutions of $ax + 4 \leq -12$.



85. Earning You can earn money by handing out flyers in the afternoon for \$6.50 an hour and by typing a newsletter in the evening for \$8 an hour. You have 20 hours available to work. What are the greatest number of hours you can spend handing out flyers and still make at least \$145?

86. Freight Handling The freight elevator of a building can safely carry a load of at most 4000 lb. A worker needs to move supplies in 50-lb boxes from the loading dock to the fourth floor of the building. The worker weighs 160 lb. The cart she uses weighs 95 lb.
a. What is the greatest number of boxes she can move in one trip?
b. The worker must deliver 310 boxes to the fourth floor. How many trips must she make?

Standardized Test Prep

Multiple Choice

87. The Science Club hopes to collect at least 200 kg of aluminum cans for recycling this semester (21 weeks). The graph at the right shows the first week's results.

Let x represent the average mass of cans required per week for the remainder of the semester. Which inequality would you use to find x?

A. $x \geq \frac{200}{21}$ **B.** $x \geq \frac{(200 - 8)}{21}$

C. $x \geq \frac{(200 - 8)}{20}$ **D.** $x \geq \left(\frac{200}{20}\right) - 8$