

Master 6.18

Extra Practice 1

Lesson 6.1: Solving Equations by Using Inverse Operations

1. Solve each equation and verify the solution.

a) $-27.25 = c + 2.25$

b) $3x = 15.6$

c) $-76.05 = -9b$

d) $\frac{w}{4.5} = -3.5$

2. Solve each equation and verify the solution.

a) $\frac{d}{7} - 3 = 11$

b) $-16 = \frac{p}{6} + 2$

c) $3.1 - 0.2a = 1.5$

d) $\frac{-4r}{5} = 1.28$

e) $8 - \frac{3}{4}c = 5$

3. A taxicab charges \$2.50, plus \$1.78 per kilometre.
How long is a trip that costs \$21.19?

4. Solve each equation and verify the solution.

a) $-2(2 - x) = -6$

b) $3.2(v - 3) = 12.8$

c) $6\left(m - \frac{1}{9}\right) = \frac{55}{12}$

d) $-\frac{16}{9} = \frac{2}{3}\left(\frac{5}{2} - g\right)$

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Extra Practice 2

Lesson 6.2: Solving Equations by Using Balance Strategies

1. Solve each equation and verify the solution.
 - a) $3y - 6 = 9y$
 - b) $2a - 4 = -3a$
 - c) $-14.3 + 2c = -c + 4.9$
 - d) $-12.6f = 6.1f + 74.8$
 - e) $\frac{22.75}{w} = -3.5$

2. The sum of three times a number, plus five is equal to seven less than seven times the number. Write an equation to model this situation. Solve the equation to determine the number. Verify the solution.

3. Solve each equation and verify the solution.
 - a) $2(h - 1) = -3(h + 3)$

 - b) $4.1(2 - y) = -1.025(y - 0.5)$

 - c) $\frac{3}{4}(2x - 3) = \frac{6}{5}(3x + 1)$

 - d) $\frac{2b}{3} + \frac{11}{4} = 3 - \frac{11b}{6}$

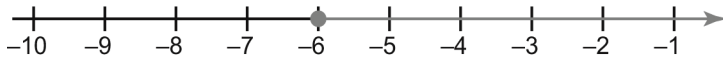
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Extra Practice 3

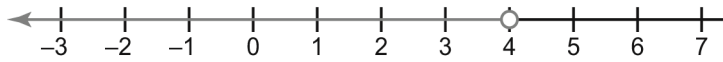
Lesson 6.3: Introduction to Linear Inequalities

1. State 3 values of the variable that satisfy each inequality.
a) $c < 7$ **b)** $a \geq -3$ **c)** $5 < n$ **d)** $-1 \geq y$

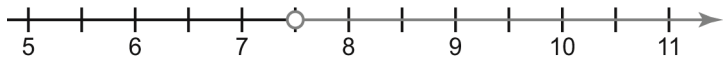
2. Write the inequality that is graphed on each number line.
a)



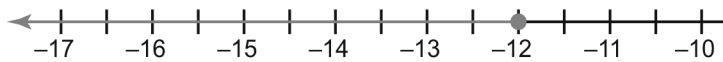
b)



c)

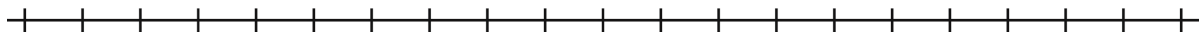


d)

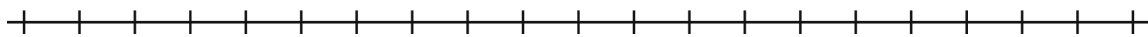


3. Write an inequality to describe each situation, then graph it.

a) The gas tank in a car contains no more than 55 L of gas. _____



b) The minimum age you must be to watch the movie is 13. _____



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Extra Practice 4

Lesson 6.4: Solving Linear Inequalities by Using Addition and Subtraction

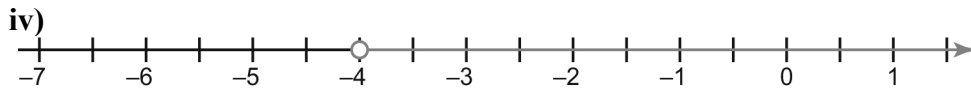
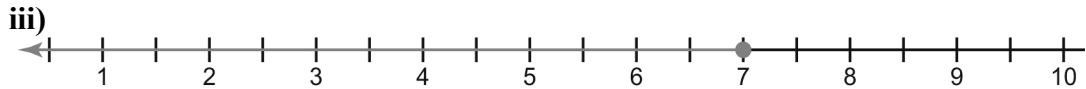
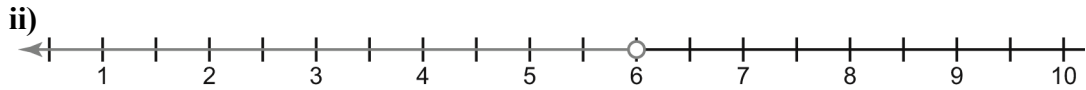
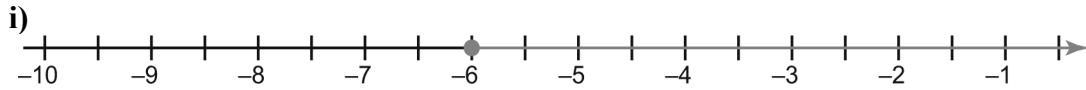
1. Match each inequality with the graph of its solution.

a) $g + 3 < 9$

b) $5 \geq m - 2$

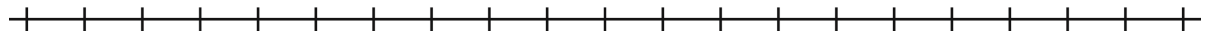
c) $2 + y \geq -4$

d) $-1 < f + 3$

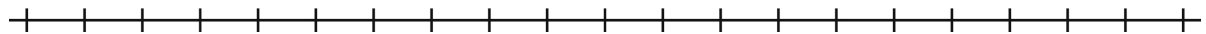


2. Solve, then graph each inequality.

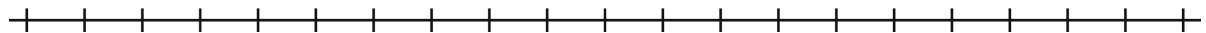
a) $7t - 4 > 3t + 12$



b) $4.2s - 15.25 \leq 4 - 1.3s$



c) $\frac{1}{2} + \frac{4}{7}p > \frac{13}{10}$



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Extra Practice 5

Lesson 6.5: Solving Linear Inequalities by Using Multiplication and Division

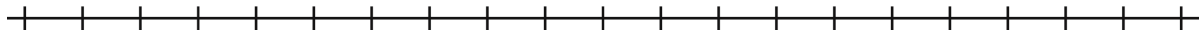
1. Do not solve each inequality. Determine which of the given numbers are solutions of the inequality.

a) $3t < -5$
-3, 0, 1

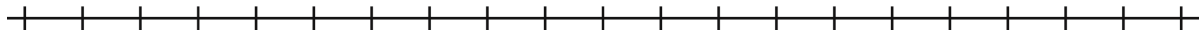
b) $5 - 3d \geq 2 - d$
-5, 0, 5

2. Solve each inequality and graph the solution.

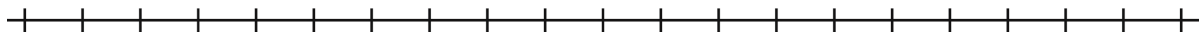
a) $-3.5a < -1.3a + 6.6$



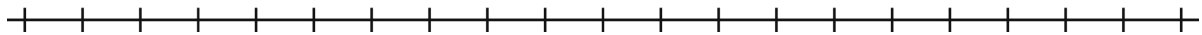
b) $-\frac{5f}{6} - \frac{2}{3} > \frac{4}{3}$



c) $1.3 - 2.5x \leq -1.1x - 0.52$



d) $-3(n - 2.5) \leq 4(3.5 - n)$



3. Nadia gets paid \$1000 per month plus 5% commission on her sales. She wants to earn at least \$2200 this month. Write an inequality to represent this situation, then solve it to determine how much Nadia must sell to reach her goal.

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Extra Practice Sample Answers

Extra Practice 1 – Master 6.18

Lesson 6.1

- $c = -29.5$
 - $x = 5.2$
 - $b = 8.45$
 - $w = -15.75$
- $d = 98$
 - $p = -108$
 - $a = 8$
 - $r = -1.6$
 - $c = 4$
- The trip is 10.5 km.
- $x = -1$
 - $v = 7$
 - $m = \frac{7}{8}$
 - $g = \frac{31}{6}$

Extra Practice 2 – Master 6.19

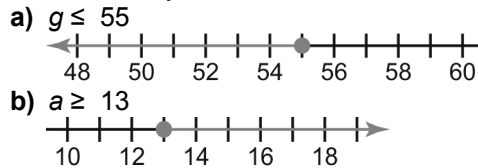
Lesson 6.2

- $y = -1$
 - $a = \frac{4}{5}$
 - $c = 6.4$
 - $f = -4$
 - $w = -6.5$
- Variables may differ.
 $3x + 5 = 7x - 7$
 $x = 3$
- $h = -\frac{7}{5}$
 - $y = 2.5$
 - $x = -\frac{23}{14}$
 - $b = \frac{1}{10}$

Extra Practice 3 – Master 6.20

Lesson 6.3

- Answers will vary.
 - 6, 0, -2
 - 3, 0, 2
 - 6, 10, 20
 - 1, -5.5, -10
- Variables may differ.
 - $x \geq -6$
 - $x < 4$
 - $x > 7.5$
 - $x \leq -12$
- Variables may differ.



Extra Practice 4 – Master 6.21

Lesson 6.4

- ii
 - iii
 - i
 - iv
- $t > 4$
 - $s \leq 3.5$
 - $p > \frac{7}{5}$

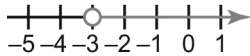
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**Extra Practice and Activating Prior Knowledge
Sample Answers**

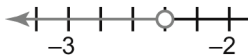
Extra Practice 5 – Master 6.22

Lesson 6.5

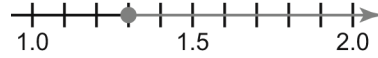
1. a) -3
 b) $-5, 0$
2. a) $a > -3$



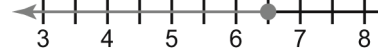
b) $f < -\frac{12}{5}$



c) $x \geq 1.3$



d) $n \leq 6.5$



3. $1000 + 0.05s \geq 2200$
 $s \geq 24\,000$
 Nadia must sell at least \$24 000 to reach her goal.

Activating Prior Knowledge – Master 6.25

1. a) $z = 6$ b) $w = -3$
 c) $d = 1$ d) $r = 6$
 e) $v = 1$ f) $d = -5$

Master 6.25

Activating Prior Knowledge

Using Models to Solve Equations

Quick Review

We can use a balance scales model and algebra tiles to solve equations.

Example

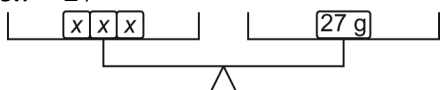
Use a model to solve each equation. Verify each solution.

a) $3x = 27$

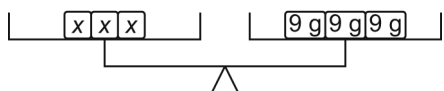
b) $2j - 3 = -13$

Solution

a) $3x = 27$



Since there are 3 identical unknown masses in the left pan, replace 27 g in the right pan with 3 equal masses. Each mass is 9 g.

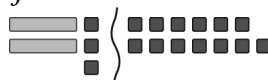


So, each unknown mass is 9 g.
 $x = 9$



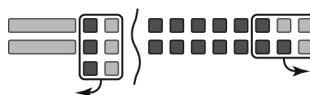
To verify, substitute $x = 9$ in $3x = 27$.
Left side = $3(9) = 27$ Right side = 27
Since the left side equals the right side,
 $x = 9$ is correct.

b) $2j - 3 = -13$



Rearrange the tiles to have all the variable tiles on one side and the unit tiles on the other side.

To isolate the j -tiles on the left side, add 3 positive unit tiles to each side to make zero pairs.



There are 2 j -tiles. So, arrange the unit tiles into 2 equal groups.



The solution is $j = -5$
To verify, substitute $j = -5$ in $2j - 3 = -13$.
Left side = $2(-5) - 3 = -13$ Right side = -13
Since the left side equals the right side,
 $j = -5$ is correct.

Check

1. Solve each equation and verify the solution.

a) $3z = 18$

b) $-4w = 12$

c) $8d - 2 = 6$

d) $-2r + 4 = -8$

e) $3(v + 4) = 15$

f) $-2(d - 1) = 12$