

Course 3 Midterm Study Guide

**Textbook Cumulative Review:**

Chapters 1 – 2: p. 90 – 91 #1,2, 5-8, 15-18

Chapters 3 – 4: p. 186 – 187 #1-4, 9-16, 21-34, 36, 38-41

Chapters 1 – 2 Cumulative Extra Practice

**Write the prime factorization of each number in exponential notation.**

1. 30,375

2. 29,400

**Simplify each expression. Write your answer using a positive exponent.**

5.  $\frac{7^4 \cdot 13^4}{(8^0)^4}$

6.  $\frac{4^5 \cdot (-5^5) \cdot 5^0}{2^{-5}}$

7.  $(16^3 \cdot 4^3)^4 \div 4^{12}$

8.  $(81^6 \div 81^3) \cdot \frac{(6^0)^3}{3^3 \cdot 9^3}$

**Evaluate each expression and write your answer in scientific notation.  
Identify the greater number.**

15.  $2.28 \cdot 10^{12} + 2.69 \cdot 10^{12}$  and  $8.63 \cdot 10^{12} - 4.09 \cdot 10^{12}$

16.  $7.4 \cdot 10^{-4} - 6.5 \cdot 10^{-5}$  and  $3.6 \cdot 10^{-5} - 7.6 \cdot 10^{-6}$

## Chapters 3 – 4 Cumulative Extra Practice

**Solve each equation. Show your work.**

1.  $3(2x - 4) - 7 = 23$

2.  $5x - (8 - 3x) = 72$

3.  $\frac{1}{6}(x + 3) - 4 = -3.2$

4.  $2x - \frac{5}{9} = \frac{7x + 8}{9}$

**Tell whether each equation has one solution, no solution, or an infinite number of solutions. Show your work.**

9.  $8 - 5x = 11x - 24$

10.  $8x + 6 = 3\left(\frac{8}{3}x + 2\right)$

11.  $14 - (12 - 4y) = \frac{1}{2}(8y + 3)$

12.  $9y + 8 = 4\left(y - \frac{3}{4}\right)$

**Find the value of y when x = -3.**

13.  $5x + 13 = 4 + y$

14.  $7x - 3y = 6$

**Find the value of y when x = -3.**

15.  $2x - 3y = \frac{1}{4}(x - 13)$

16.  $\frac{2}{9}(3y + 4x) = 2x$

17.  $\frac{5x - 3}{2y} = -\frac{3}{5}$

18.  $\frac{7y - 4}{2} = 3x$

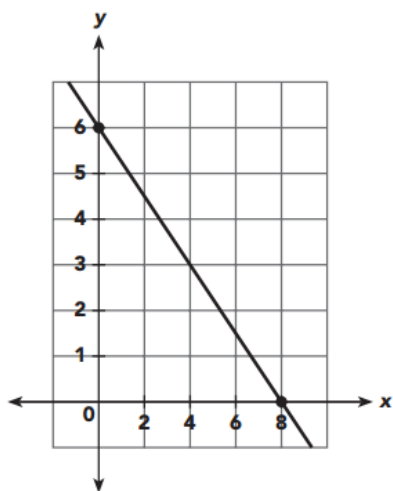
**Find the slope of the line passing through each pair of points.**

25. (1, 6) and (5, 9)

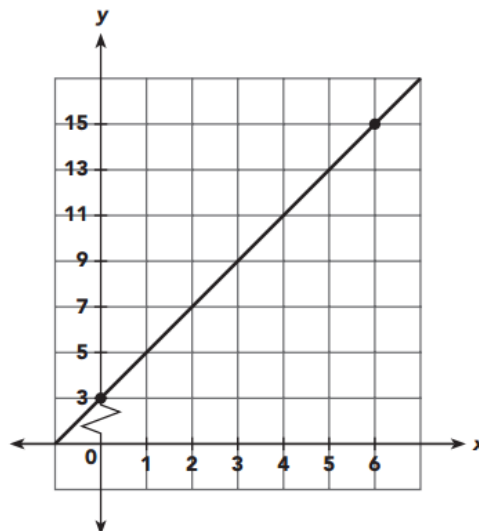
26. (3, 2) and (7, -3)

Identify the y-intercept. Then calculate the slope using the points indicated.

27.

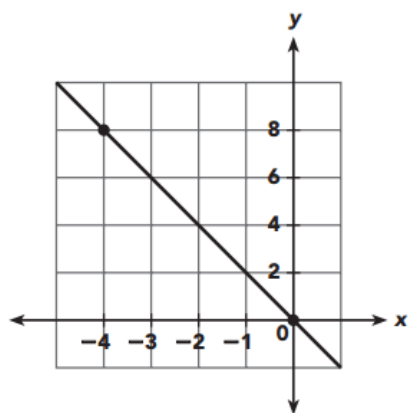


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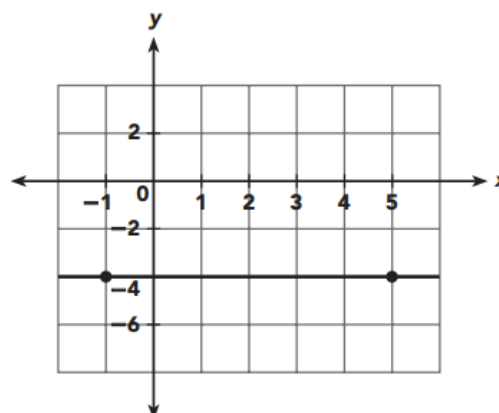


Identify the y-intercept. Then calculate the slope using the points indicated.

29.



30.



For each equation, find the slope and the y-intercept of the graph of the equation.

31.  $y = -\frac{4}{3}x$

32.  $y = 9x - 4$

Use the given slope and y-intercept of a line to write an equation in slope-intercept form.

33. Slope,  $m = 0$

y-intercept,  $b = -\frac{2}{3}$

34. Slope,  $m = -\frac{1}{4}$

y-intercept,  $b = 5$

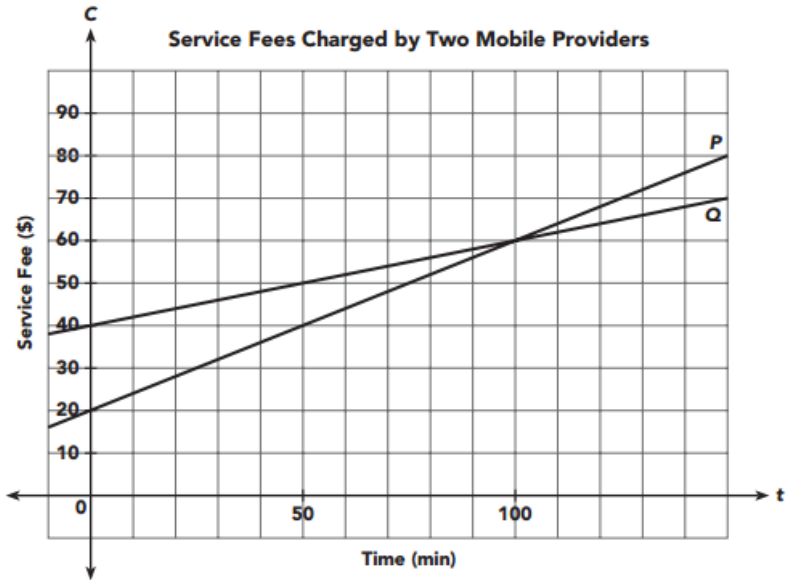
36. A line has slope 7 and passes through the point (1, 9). Write an equation of the line.

Graph the linear equation using a table of values OR m and b.

37.  $y = -\frac{3}{2}x + 4$

38. Graph the line with a slope of  $\frac{1}{4}$  that passes through the point  $(0,3)$ .

45. Mobile providers  $P$  and  $Q$  each charge their customers  $C$  dollars. The charges consist of a monthly service fee plus a fixed usage charge per minute,  $t$ .



- a) Find the monthly service fee that each mobile provider charges.
- b) Which mobile provider charges a lesser per minute fee for the first 100 minutes?