

1. Consider the following system of linear equations.

$$2x + 3y + 6 = 0$$

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

Which of the following statements is true?

- A. The system has an infinite number of solutions.
- B. The system has a unique solution.
- C. The system has no solution.
- D. The system has two solutions.

2. Given the following system of equations.

$$2x - 5y + 12 = 0$$

$$x - 3y = 4$$

What is the solution for this system?

- A. (-41, -14)
- B. (-44, -20)
- C. (-56, -20)
- D. (-56, -12)

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3. Students in a school sold pencils and mugs to raise money for sporting activities.

Let x : the number of **pencils** sold.

Let y : the number of **mugs** sold.

They made a profit of \$1.15 for each pencil and a profit of \$3.25 for each mug. In total, they made a profit of \$1260

The students sold 5 times as many pencils as mugs.

a. $x = 5y$
 $1.15x + 3.25y = 1260$

c. $y = 5x$
 $1.15x + 3.25y = 1260$

b. $x = 5y$
 $1.15x + 16.25y = 1260$

d. $y = 5x$
 $5.75x + 3.25y = 1260$

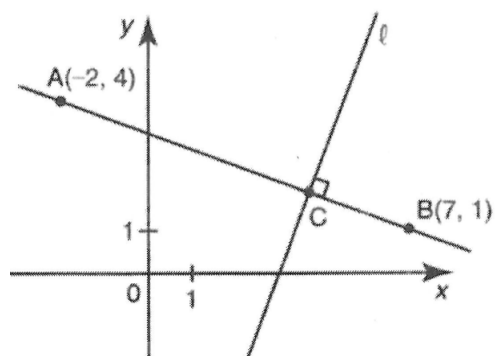
4. What is the distance between point A (-25, 73) and point B (126, -44)?

5. What point divides the line from point **A (-25, 73)** to point **B (126, -44)** in a ratio of **3:5**?
6. What is the equation of a line that passes through point **A (-12, 16)** and that is parallel to the line defined by the equation **$-12x + 5y - 40 = 0$** ?
7. What is the endpoint of a line which has one end at (6, 18) and the midpoint at (18, 30)?
- A) (-6, 6)
 - B) (12, 24)
 - C) (24, 12)
 - D) (30, 42)

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8. Point P is located $\frac{3}{5}$ of the distance from point B (25, 75) and point A (10, 30). Which coordinates represent point P?
- A) (15.625, 46.875)
 - B) (16, 48)
 - C) (19, 57)
 - D) (19.375, 58.125)
9. Which of the following equations represents a line perpendicular to $4x + 3y + 12 = 0$?
- A) $3x + 4y - 8 = 0$
 - B) $y = \frac{4}{3}x - 4$
 - C) $-3x + 4y - 8 = 0$
 - D) $y = -\frac{4}{3}x + 4$
10. Consider the line l given by the equation: $2x - 6y + 12 = 0$
Which of the following statements is false?
- a) the x-intercept is -6
 - b) the y-intercept is 2
 - c) the slope of the line is $-\frac{1}{3}$
 - d) Line l is parallel to the line given by the equation $x - 3y - 15 = 0$.

11. Line l is perpendicular to line AB at point C . Point C divides segment AB in a ratio of 2:1 (or $2/3$) from point A . What is the x -intercept of line l ?

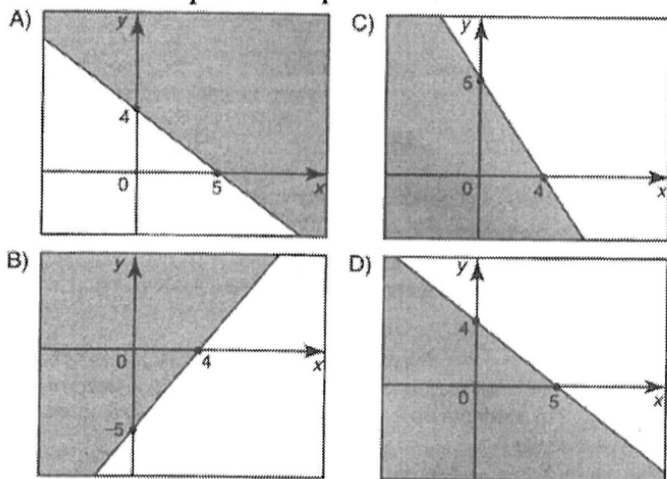


12. Two cell phone companies charge different rates.
- Company A charges \$45 a month and \$0.15 per text message.
 - Company B charges \$50 a month and \$0.10 per text.

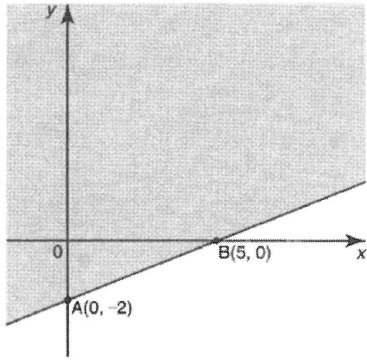
When is company B a better deal than company A?

13. You start up your own business selling headphones and watches.
 In your first month, you sold 12 headphones and 18 watches, and made \$1536 gross profit.
 In your second month, you sold 21 headphones and 12 watches, and made \$1479.
 How much did you charge for headphones and how much for watches?
 If you sold 18 headphones and 16 watches, how much would you make?

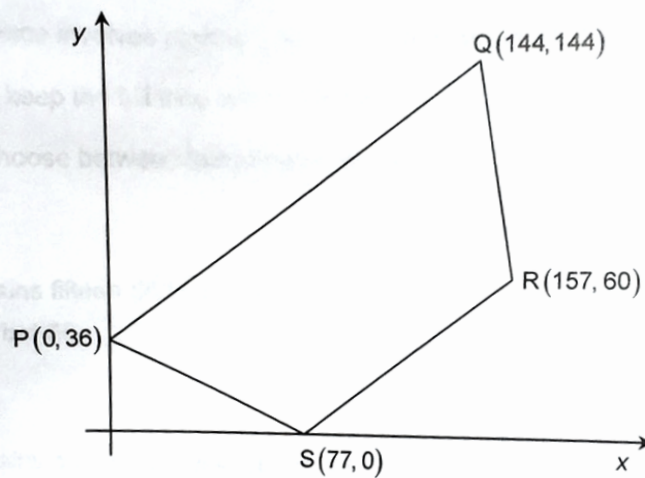
14. Consider the two-variable inequality $4x \leq -5y + 20$
 Which half-plane represents the solution set of this inequality?



15. The half-plane containing the origin, and whose borders pass through $A(0, -2)$ and $B(5, 0)$ is shown. Determine the inequality corresponding to this half-plane.



16. Consider quadrilateral PQRS represented in the Cartesian plane below



Show that quadrilateral PQRS is an isosceles trapezoid.

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17. Last Sunday, Gerald treated his whole family to dinner at a restaurant to celebrate his mother Vivian's 90th birthday. Family members were sitting at three different tables.

Each family member could choose either the Asian meal or the Mediterranean meal.

After dinner, the server gave the following three bills to Gerald. The taxes are included in the totals indicated.

Bill for table 1	Bill for table 2	Bill for table 3
<u>6</u> Asian meals	<u>4</u> Asian meals	<u>?</u> Asian meals
<u>2</u> Mediterranean meals	<u>3</u> Mediterranean meals	<u>5</u> Mediterranean meals
Total: \$173	Total: \$159.50	Total: \$212.50

How many people sitting at table 3 chose the Asian meal?