More on lines, units and two-variable inequalities Worksheet

Algebra

Name _____ Date _____

Warm-up

1. Which point does $y - 9 = 3(x - 7)$ pass through?
   (A) $(-7, 9)$ (B) $(7, 9)$ (C) $(9, 7)$ (D) $(7, 3)$

2. Is $(5, 0)$ a solution of $y > x$?
   (A) Yes (B) No

3. $f(x) = x + 2$ when $x < 0$, and $f(x) = 6x$ when $x \geq 0$. Find $f(4)$.

4. Find the x-intercept of $6x + 4y = 30$. (Assume it's a whole number.)

5. What kind of line does $y \geq x + 4$ use?
   (A) Solid (B) Dashed (C) None (D) Vertical

Practice

6. The line $3x + y = 22$. What is y when $x = 2$?

7. You have \$29. Pens cost \$3 and books \$9. Which inequality fits?
   (A) $x + y \leq 29$ (B) $3x + 9y \geq 29$ (C) $3x + 9y \leq 29$ (D) $9x + 3y = 29$

8. A plan is \$32 for up to 8 GB, and then \$5 per extra GB. What does 9 GB cost?
   (A) 32 dollars (B) 37 dollars (C) 77 dollars (D) 5 dollars

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9. A line has slope 2 and passes through $(6, 13)$. What is y when $x = 0$?

10. Which point satisfies $y < 2x + 1$?
    (A) $(1, 5)$ (B) $(1, 2)$ (C) $(1, 4)$ (D) $(1, 3)$

11. Convert 36 km/h to m/s.

12. Find the slope of $8x + 8y = 2$.

13. Which is true of $x + y \leq 9$?
    (A) $(0, 0)$ is a solution (B) $(0, 0)$ is not a solution (C) The line is dashed (D) Only points on the line work

Challenge

14. Lines $4x + 4y = 1$ and $12x + ky = 5$ are parallel. Find k.

15. Which point is in both $y > x$ and $y < 4$?
    (A) $(4, 0)$ (B) $(5, 5)$ (C) $(0, 3)$ (D) $(0, 5)$

16. A pipe fills 7 gallons per minute. How many gallons in 3 hours?

17. Find k so that $(2, k)$ is on the line through $(0, 4)$ with slope 6.

18. With $x + y \leq 11$ and $x \geq 0$ and $y \geq 0$, what's the largest possible y?

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More on lines, units and two-variable inequalities Worksheet: Answer Key

Algebra

1. (B) $(7, 9)$

   The form shows the point directly.

2. (B) No

   $0 > 5$ is false.

3. 24

   $4 \geq 0$, so use the second rule.

4. 5

   Set $y = 0$: $6x = 30$.

5. (A) Solid

   $\geq$ includes the line itself.

6. 16

   $y = 22 - 3(2)$.

7. (C) $3x + 9y \leq 29$

   The total cost can't go over 29.

8. (B) 37 dollars

   1 extra GB cost 1×5 more.

9. 1

   $y - 13 = 2(0 - 6)$.

10. (B) $(1, 2)$

    At $x = 1$ the line is at 3, so y must be below that.

11. 10

    Multiply by 1000 and divide by 3600.

12. -1

    Solve for y: the slope is $-\frac{8}{8}$.

13. (A) $(0, 0)$ is a solution

    $0 + 0 \leq 9$ is true.

14. 12

    Parallel lines have proportional coefficients.

15. (C) $(0, 3)$

    It needs y above x and below 4.

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16. 1260

    3 hours is 180 minutes.

17. 16

    $y = 6x + 4$ at $x = 2$.

18. 11

    Take $x = 0$, so $y \leq 11$.

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