

Cumulative Test

14A

Cumulative Test

continued

A

1. (60) A piece of fabric is in the shape of a square. The area measures 28 square inches. Find the length of one side of the piece of fabric.

2. (30) Corinne runs at 6 miles per hour. What is her rate in miles per minute?

Simplify problems 3–6.

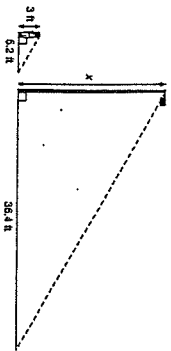
3. (60) $3\sqrt{ab} - 6\sqrt{ab}$

4. (7) $3 - 4[(8 - 2)^2 + 4]$

5. (32) $\frac{a^{-2}}{b^4}$

6. (36) $(2x - 2)(-3x + 3)$

7. (60) A street light casts a shadow 36.4 feet long. A child who is 3 feet tall casts a shadow 5.2 feet long. The triangle drawn with the street light and its shadow is similar to the triangle drawn with the child and her shadow. How tall is the street light?



8. (60) Determine whether the lines are parallel.

$$y = \frac{2}{5}x + 6$$

$$-2x + 5y = 30$$

Solve the inequalities in problems 9–10 and graph them on a number line.

9. (60) $x - 6 \geq -2$

10. (70) $\frac{x}{3} < 2$

11. (60) Nick is typing a research paper on the computer. His typing speed is inversely related to his typing time. If he is typing at 45 words per minute, it will take him 4 hours to type his entire paper. How long will it take him if he types 30 words per minute?

12. (60) A square photograph has a side length of 5n centimeters. What is the area of the photograph?

13. (60) Solve the system of equations by elimination.

$$6x - 4y = -8$$

$$3y = 3x + 9$$

14. (40) A boat travels at a constant speed as shown in the table below. What is the rate of change?

Time (hours)	2	4	6	8
Distance (miles)	70	140	210	280

15. (44) Determine the slope of the line that contains the points (2, 4) and (3, -3).

16. (70) A supermarket marks down the price of a \$3.00 loaf of bread by 15%. What is the discount and the new price of the loaf of bread?

17. (64) Make a box-and-whisker plot to display data of student heights (in inches) in a math class.

- 65, 71, 72, 59, 64, 61, 57, 76, 68, 63, 64, 74, 64, 69, 68

Half of the students are between which heights?

18. (60) What is the probability of rolling either two identical numbers or rolling a sum of 6 using two number cubes, each labeled 1–6?

19. (60) Identify the constant of variation if $y = 6$ when $x = 3$, given that y varies directly with x . Then write the equation of variation.

20. (67) Solve the system of equations below.

$$y = \frac{2}{5}x - 2$$

$$4x - 10y = 20$$

1. $A = 28 \text{ in}^2$

$\sqrt{28} = \sqrt{2 \cdot 2 \cdot 7} = 2\sqrt{7} \text{ in.}$

2. $\frac{6 \text{ mi}}{1 \text{ hr}} \cdot \left(\frac{1 \text{ hr}}{60 \text{ min}}\right) = \frac{6 \text{ mi}}{60 \text{ min}} = \frac{1 \text{ mi}}{10 \text{ min}}$

$6 \div 60 = .1$

3. $3\sqrt{ab} - 6\sqrt{ab} = -3\sqrt{ab}$

* combine like radicals

6. $(2x-2)(-3x+3) =$ FOIL

$-6x^2 + 6x + 6x - 6 = -6x^2 + 12x - 6$

7. $\frac{3}{50} = \frac{x}{360}$
 $109.2 \div 50 = 2.184$
 $2.184 \cdot 360 = 786.24$

* Round And

8. $y = \frac{2}{5}x + 6$ → Slope of $\frac{2}{5}$

$-2x + 5y = 30$ → solve for y, see if it's also $\frac{2}{5}$
 $\frac{5y}{5} = \frac{2x}{5} + \frac{30}{5}$
 $y = \frac{2}{5}x + 6$ → Also $\frac{2}{5}$ slope.

Yes! Parallel

9. $x - y \geq -2$
 $x \geq y - 2$

10. $x < 2 \cdot (-3)$
 $x < -6$

* Multiply each side by -3
 * Flip symbol

11. Inverse Variation: $x \cdot y = k$
 $x_1 \cdot y_1 = x_2 \cdot y_2$

$45 \cdot 4 = 30 \cdot y_2$
 $180 = 30 \cdot y_2$
 $y_2 = \frac{180}{30} = 6 \text{ hours}$

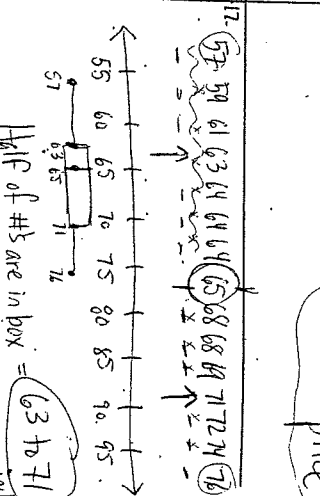
12. $A = b \cdot h$
 $A = 5n \cdot 5n$
 $A = 25n^2 \text{ cm}^2$

13. $6x - 4y = -8$
 $3y = -3x + 9$
 $-3x + 3y = 9$
 $6x - 4y = -8$
 $6x - 4y = -8$
 $6x - 4y = -8$
 $2y = 10$
 $y = 5$

14. $70 \div 2 = 35$
 $140 \div 4 = 35$
 $210 \div 6 = 35$
 $280 \div 8 = 35$

15. $y_2 - y_1 = \frac{-3 - 4}{3 - 2} = \frac{-7}{1}$
 Slope = -7

16. $3 \times 15 = 45$ discount
 $\$3 - \$45 = \$95$ new price



18. Prob of two identical = $\frac{6}{36}$

1	2	3	4	5	6
1	1	2	3	4	5
2	2	1	3	4	5
3	3	3	1	4	5
4	4	4	4	1	5
5	5	5	5	5	1
6	6	6	6	6	6

Prob of sum of 6 = $\frac{5}{36}$

19. Direct Variation
 $y = k \cdot x$
 $k = \frac{y}{x}$
 $k = \frac{6}{3} = 2$
 $y = 2x$

20. $y = \frac{2}{5}x - 2$
 $4x - 10y = 20$
 $4x - 4x + 20 = 20$
 $0x + 20 = 20$
 All real #s
 They are same line.