NAME _____ DATE _____ PERIOD _____

SCORE _____

2 Chapter 2 Test, Form 2C

For Questions 1–8, solve each equation.

1. $12 + r = 3$ — 1. _____

2. $\frac{1}{5} = x - \frac{2}{5}$ — 2. _____

3. $-12 = p - 7$ — 3. _____

4. $-7b = -35$ — 4. _____

5. $31 = -\frac{n}{6}$ — 5. _____

6. $-\frac{5}{8}w = -9$ — 6. _____

7. $\frac{9}{25} = \frac{p}{125}$ — 7. _____

8. $-3a + 4 = -14$ — 8. _____

9. Translate the following sentence into an equation. *A number x subtracted from 36 is three times the sum of four and x.* — 9. _____

10. Translate the following equation into a verbal sentence. $3(x + y) = 2y - x$ — 10. _____

For Questions 11 and 12, write an equation for each problem. Then solve the equation.

11. What number decreased by 3.5 equals 12.7? — 11. _____

12. Twelve is added to the product of a number and 5. The result is −3. Find the number. — 12. _____

13. Julie cashed a paycheck and repaid her brother $10 that she had borrowed from him. She then spent $30 on fuel for her car and half of the remaining money on a new tent for camping. She bought a pair of running shoes for $29.45 and had $17.75 left. How much did Julie receive when she cashed her paycheck? — 13. _____

14. Use cross products to determine whether the pair of ratios $\frac{4}{6}$ and $\frac{14}{21}$ form a proportion. Write *yes* or *no*. — 14. _____

NAME _____ DATE _____ PERIOD _____

2 Chapter 2 Test, Form 2C *(continued)*

15. Solve the proportion $\frac{x}{6} = \frac{2}{9}$. **15.** _____

16. Solve the proportion $\frac{12}{15} = \frac{18}{b}$. **16.** _____

For Questions 17–19, solve each equation.

17. $-x + 4 = x + 6$ **17.** _____

18. $5n + 7 = 7(n + 1) - 2n$ **18.** _____

19. $-4(p + 2) + 8 = 2(p - 1) - 7p + 15$ **19.** _____

20. Solve $\frac{a}{b}x - c = 0$ for x. **20.** _____

21. State whether the percent of change is a percent of increase or a percent of decrease. Then find the percent of change. original: 55 new: 44 **21.** _____

22. A shirt costs \$12.00. If the sales tax is 7%, find the total cost. **22.** _____

23. How many liters of a 90% acid solution must be added to 6 liters of a 15% acid solution to obtain a 40% acid solution? **23.** _____

24. A freight train leaves a station traveling 60 miles per hour. Thirty minutes later a passenger train leaves the station in the same direction on a parallel track at a speed of 72 miles per hour. How long will it take the passenger train to catch the freight train? **24.** _____

25. GEOMETRY A container company wants to make a cylindrical can with a volume of 1130 cubic inches. The formula $V = \pi r^2 h$ represents the volume of a cylinder. In this formula, V represents the volume, r represents the radius of the cylinder's base, and h represents the height of the cylinder. Solve for h. What height should the company make the can if the radius of the base must be 6 inches? **25.** _____

Bonus A clown is preparing for a party by inflating one balloon for every invited guest. Just when she has half of the necessary balloons inflated, 2 of them pop. She inflates 5 more balloons, and two pop. Then 6 balloons are carried away by the wind. She finishes by inflating 16 more balloons, and then learns that only 12 guests will attend the party. How many extra balloons did the clown inflate? **B:** _____

Key

① $12 + r = 3$
$-12 \quad -12$
$\boxed{r = -9}$

② $\frac{1}{5} = x - \frac{2}{5}$
$+\frac{2}{5} \quad +\frac{2}{5}$
$\boxed{\frac{3}{5} = x}$

③ $-12 = p - 7$
$+7 \quad +7$
$\boxed{-5 = p}$

④ $\frac{-7b}{-7} = \frac{-35}{-7}$
$\boxed{b = 5}$

⑤ $31 = \frac{-n}{6}$

⑥ $31 = \frac{-n}{6}(6)$
$186 = -n$
$\frac{186}{-1} = \frac{-n}{-1}$
$\boxed{-186 = n}$

⑥ $-\frac{5}{8}w = -9$
$\left(\frac{8}{-5}\right)\frac{-5}{8}w = -9\left(\frac{8}{-5}\right)$
$w = \frac{-72}{-5}$
$\boxed{w = \frac{72}{5}}$

⑦ $\frac{9}{25} = \frac{p}{125}$
$125\left(\frac{9}{25}\right) = \left(\frac{p}{125}\right)125$
$\boxed{45 = p}$

⑧ $-3a + 4 = -14$
$-4 \quad -4$
$\frac{-3a}{-3} = \frac{-18}{-3}$
$\boxed{a = 6}$

⑨ $\boxed{36 - x = 3(4 + x)}$

⑩ 3 times the sum of x and y is the same as the product of 2 and y reduced by x.

⑪ $x - 3.5 = 12.7$
$+3.5 \quad +3.5$
$\boxed{x = 16.2}$

⑫ $5n + 12 = -3$
$-12 \quad -12$
$\frac{5n}{5} = \frac{-15}{5}$
$\boxed{n = -3}$

⑭
$\frac{4}{6} \stackrel{?}{=} \frac{14}{21}$
$6 \cdot 14 \stackrel{?}{=} 4 \cdot 21$
$84 \stackrel{?}{=} 84$ ✓ Proportional

(15) $\frac{x}{6} = \frac{2}{9}$

$\frac{9x}{9} = \frac{12}{9}$

$x = \frac{12^4}{9_3} = \boxed{\frac{4}{3}}$

(16) $\frac{12}{15} = \frac{18}{b}$

$\frac{270}{12} = \frac{12b}{12}$

$\boxed{22.5 = b}$

(17) $-x + 4 = x + 6$

$-4 \quad -4$

$-x = x + 2$

$-x \quad -x$

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

$\boxed{x = -1}$

(18) $5n + 7 = 7(n+1) - 2n$

$5n + 7 = 7n + 7 - 2n$

$5n + 7 = 5n + 7$

$-7 \quad -7$

$\frac{5n}{5} = \frac{5n}{5}$

$n = n$

$\boxed{\text{all real \#'s}}$

(19) $-4(p+2) + 8 = 2(p-1) - 7p + 15$

$-4p - 8 + 8 = 2p - 2 - 7p + 15$

$-4p = -5p - 2 + 15$

$-4p = -5p + 13$

$+5p \quad +5p$

$\boxed{p = 13}$

(20) Solve $\frac{a}{b}x - c = 0$ for x.

$+c \quad +c$

$\frac{\frac{a}{b}x}{\frac{a}{b}} = \frac{c}{\frac{a}{b}}$

$x = \frac{c}{1} \div \frac{a}{b}$

$x = \frac{c}{1} \cdot \frac{b}{a}$

$\boxed{x = \frac{cb}{a} = \frac{bc}{a}}$

(22) $12 + (0.07 \cdot 12)$

$12 + 0.84 = \boxed{12.84}$