Honors Algebra 1 - Chapter 2 Review #2

*Name:*_____ *Date:*_____ *Period:* _____

Instructions: Clearly show work to receive full credit. Circle your answers

Section 1: Review Solving Proportion Equations (Solve and Check)

M $\frac{11}{4} = \frac{d+7}{8}$

$88 = 4(D+7)$

$88 = 4D + 28$

$-28 \quad -28$

$4D = 60$

$D = 15$

C: $\frac{11}{4} = \frac{15+7}{8}$

$2.75 = 2.75$ ✓

R $\frac{3}{x-5} = \frac{10}{x+2}$

$3(x+2) = 10(x-5)$

$3x + 6 = 10x - 50$

$-3x \quad -3x$

$6 = 7x - 50$

$+50 \quad +50$

$7x = 56$

$x = 8$

C: $\frac{3}{8-5} = \frac{10}{8+2}$

$1 = 1$ ✓

N $\frac{8+a}{15} = \frac{1+a}{6}$

$6(a+8) = 15(a+1)$

$6A + 48 = 15A + 15$

$-6A \quad -6A$

$48 = 9A + 15$

$-15 \quad -15$

$\frac{9A}{9} = \frac{33}{9}$

$A \approx 3.67$

When in doubt → round 2 decimals

C: $\frac{8+3.67}{15} = \frac{1+3.67}{6}$

$.778 \approx .778$ ✓

P $\frac{w}{5} = \frac{w-14}{9}$

Cross multiply.

$9 \cdot w = 5(w-14)$

Then Solve for w

$9w = 5w - 70$

$-5w \quad -5w$

$\frac{4w}{4} = \frac{-70}{4}$

$w = -17.5$

Checking orig EQ

C: $\frac{-17.5}{5} = \frac{-17.5-14}{9}$

$-3.5 = -3.5$ ✓

B $\frac{7-2n}{7+2n} = \frac{1}{18}$

$18(7-2N) = 7+2N$

$126 - 36N = 7 + 2N$

$+36N \quad +36N$

$126 = 7 + 38N$

$-7 \quad -7$

$\frac{119}{38} = \frac{38N}{38}$

$N \approx 3.13$

C: $\frac{7-2(3.13)}{7+2(3.13)} = \frac{1}{18}$

$.056 \approx .056$ ✓

A $\frac{11b}{6} = \frac{b-5}{1}$

Crossmult

$11b = 6(b-5)$

$11B = 6B - 30$

$-6B \quad -6B$

$5B = -30$

$B = -6$

C: $\frac{11(-6)}{6} = -6-5$

$-11 = -11$ ✓

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Section 2: Review Proportion Word Problems. Write the Key Info. Define the variable. Give the Proportion Equation. Answer in words.

1. Water was leaking from a faucet at a rate of 1.5 gal every 5 min. If it took 18 min to stop the leak, how much water was wasted?

KI:
* H_2O leaks 1.5 GAL every 5 min
* Takes 18 min to stop

Define a Variable ← Need UNITS
X = # of gal of water wasted

Write a proportion
$\frac{1.5\ GAL}{5\ MIN} = \frac{X}{18\ MIN}$

Solve
$\frac{(1.5)(18)}{5} \cdot \frac{5x}{5}$
$X = 5.4$

Wasted 5.4 Gals of water

2. The ratio of mango juice to guava juice in Paradise Punch is 5 to 3. Leilani has 32 fl oz of mango juice. How much guava juice does she need?

KI
$\frac{Mango}{Guava} = \frac{5}{3}$
32 oz mango
X = # oz guava

PROPORTION
$\frac{5}{3} = \frac{32}{X}$
$X = 19.2$
C: $1.67 \approx 1.67$ ✓

Need 19.2 oz of guava juice

3. A locomotive is 58 ft long and 11 ft wide. A special effects designer makes a model that is 20 in. long. How wide should it be?

KI:
TRAIN
58 ft x 11 ft → 696 in by 132 in
Model
20 in x ? width
X = width (in)

Proportion
$\frac{696}{132} = \frac{20}{X}$
$X = 3.793$
$X \approx 3.8$ in

Width is about 3.8 in

* Remember to use Calc to check
C: $5.27 \approx 5.26$ ✓

4. A marathon runner ran the first 4 mi in 27.8 min. If she continues running at this pace, how long will it take her to run the entire marathon of 26.2 mi?

KI
Runner 4 miles / 27.8 MIN
Marathon is 26.2 mi.
X = # MIN to run marathons

Proportions
$\frac{4}{27.8} = \frac{26.2}{X}$
$X = 182.09$

Runner takes 182.09 minutes to run marathon

10. An ant that weighs 0.004 oz can lift a bread crumb that weighs 0.2 oz. If a 120-pound person were proportionally as strong as the ant, how much could the person lift?

KI
* ant is .004 oz / lifts .2 oz bread
* 120 lb person

X = # of oz of bread lifted

1ST $120\ lbs \cdot \frac{16\ oz}{1\ lbs} = 1{,}920\ oz$

Proportion $\frac{.004}{.2} = \frac{1920}{X}$
$X = (.2)(1920) \div .004$
$X = 96{,}000\ oz$

Answer: The 120 lb person can lift 96,000 oz (6,000 lb) of bread.

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① Exponents
② H→L ABC

Section 3: Simplify Expressions. Write in standard form with the variable terms in the correct order(H->L or ABC) and constant last. Circle Answer.

SKILL PRACTICE 22

2. $5(x - 8)$ $5x - 40$

4. $-3(x + 3)$ $-3x - 9$

6. $x(2x + 4)$ $x \cdot 2x + x \cdot 4 = 2x^2 + 4x$

8. $\frac{3}{2}\left(4x + \frac{4}{3}\right)$ $\frac{3}{2}(4x) + \frac{3}{2}\left(\frac{4}{3}\right) = 6x + 2$

10. $\left(-\frac{2}{3}\right)\left(3x + \frac{2}{3}\right)$ $-\frac{2}{3}(3x) + \left(\frac{-2}{3}\right)\left(\frac{2}{3}\right) = -2x - 4/9$ Keep as a fraction

12. $5 + 3(x - 4)$ $5 + 3x - 12 = 3x - 7$

SKILL PRACTICE 23

9. $\frac{6x - 4}{-2}$ $\frac{6x}{-2} + \frac{-4}{-2} = -3x + 2$

11. $(-3)(2x - 4y - 6)$ $-6x + 12y + 18$

13. $-(8 - x)$ -1 $-8 + x = x - 8$

15. $-1(6x - 5)$ $-6x + 5$

17. $(-8 + 6x)(-4)$ $= 32 - 24x \longrightarrow -24x + 32$

19. $\frac{8x - 6y + 9}{-2}$ $\frac{8x}{-2} + \frac{-6y}{-2} + \frac{9}{-2} = -4x + 3y - 4.5$

SKILL PRACTICE 24

10. $2(x - 5) + 3$ $2x - 10 + 3 = 2x - 7$

12. $8 - 2(7x - 3)$ $8 - 14x + 6 = -14x + 14$

14. $5 - (3x + 4)$ $5 - 3x - 4 = -3x + 1$

16. $-5(4x + 2) - 8$ $-20x - 10 - 8 = -20x - 18$

18. $9 + 2(3x + 4)$ $9 + 6x + 8 = 6x + 17$

20. $4 - 2(x + 4) - 3(5x - 2)$ $4 - 2x - 8 - 15x + 6 = -17x + 2$

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Section 4: Review Properties.

SKILL PRACTICE 26

Properties and Axioms are the same:

Commutative axiom of addition
Commutative axiom of multiplication
Associative axiom of addition
Associative axiom of multiplication
Additive identity
Additive inverse
Multiplicative identity
Multiplicative inverse
Distributive

Name the Property:

1. $2 + 3 = 3 + 2$ _____

3. $3 + (-3) = 0$ _____

4. $3 + 0 = 3$ _____

6. $2 + (3 + 8) = (2 + 3) + 8$ _____

7. $3(4) = (4)(3)$ _____

8. If $4 + 3 = 7$ and $7 \neq 2 + 5$, then $4 + 3 = 2 + 5$. _____

9. $5(4 + x) = 20 + 5x$ _____

10. $x = 1 \cdot x$ _____

11. $x \cdot \left(\frac{1}{x}\right) = 1$ _____

13. $5(x - 6) = (x - 6) \cdot 5$ _____

15. $2x + 4y = 2(x + 2y)$ _____

16. $(2 \cdot 3)(4) = (2)(3 \cdot 4)$ _____

18. $2 + 3x + 5 = 2 + 5 + 3x$ _____

19. $2 + (5 + 3x) = (2 + 5) + 3x$ _____

20. $5x + 3x = (5 + 3) \cdot x$ _____

Section 5: Identify parts of an expression

$-y^2 - 2 + 3yz^2 - y^2z + y^2 + 5$

- terms:
- like terms:
- coefficients:
- constant terms:

Some variables to the same exponents

The number before the variable

(in the order of the given expression)

TERMS ARE SEPERATED BY +, − SIGNS

FACTORS ARE SEPERATED BY MULT SIGNS

EX] $-3YZ^2$ has 3 FACTORS: $-3, Y, Z^2$

RAT means can be written as a fraction. Does HAVE A REPEATING DEC.

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INTEGERS — No Decimal or fraction Part. (+,-)

SECTION 6 : Name the set or sets to which each number belongs. W=whole number; I=integer; R=rational; IRR=irrational

1) $\sqrt{41}$ IRR

2) -6.123 R
$-6\frac{123}{1000}$

3) $-\sqrt{144}$ R, I
-12

4) 0 R, W, I

5) π IRR

6) $-\frac{2}{7}$ R

7) $.6\overline{6}$ $(\frac{2}{3})$ R

8) $.\overline{12}$ R

FOR $\sqrt{\ }$'S

perfect SQUARES are RATIONAL

NOT perfect SQUARES ARE IRRATIONAL.

Section 7: Solve and Check Difficult Equations. Round to 2 decimals.

Skill Practice 32

5. $6(3 - 4.5x) = 8.5 - 9x$

$18 - 27x = 8.5 - 9x$
$+27x \quad +27x$
$18 = 8.5 + 18x$
$-8.5 \quad -8.5$
$9.5 = 18x$
$\frac{9.5}{18} = \frac{18x}{18}$

$x = .527$ $\quad x \approx .53$

C: $6(3 - 4.5(.53)) = 8.5 - 9(.53)$
$3.69 \approx 3.73$ ✓

7. $9x + 3(4x - 6) = 25 - (x + 3)$

$9x + 12x - 18 = 25 - x - 3$
$21x - 18 = -x + 22$
$+x \quad +18 \quad +x \quad +18$
$\frac{22x}{22} = \frac{40}{22}$

$x = 1.818$
$x \approx 1.82$

C: $9(1.82) + 3(4(1.82) - 6) = 25 - (1.82 + 3)$
$20.22 = 20.18$ ✓

10. $2(3x - 4) - 10 = -15 + 3(2x - 1)$

$6x - 8 - 10 = -15 + 6x - 3$

$6x - 18 = 6x - 18$

$-6x \quad -6x$

$-18 = -18$ (T)

X = ALL REAL NUMBEES ← write this

Tip Check $x = 0$

C: $2(-4) - 10 = -15 + 3(-1)$

$-18 = -18$ ✓

NOTE: When the variable drops out and the numbers are EQUAL THEN SOLUTION IS "ALL REAL NUMBEES."

Skill Practice 34

8. $4 - (x - 3) = x + 7$

$4 - x + 3 = x + 7$

$-x + 7 = x + 7$

$+x \quad +x$

$7 = 2x + 7$

$-7 \quad -7$

$2x = 0$ ← Keep Going; you still have a variable

$\frac{2x}{2} = \frac{0}{2}$

$x = 0$

C: $4 - (0 - 3) = 0 + 7$

$7 = 7$ ✓

10. $2(3x - 4) - 10 = -15 + 3(2x - 1)$

SKIP

Same problem above