

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

$$\begin{aligned} 88 &= 4(d+7) \\ 88 &= 4d + 28 \\ -28 &\quad -28 \\ \hline 4d &= 60 \\ d &= 15 \end{aligned}$$

C: $\frac{11}{4} = \frac{15+7}{8}$
 $2.75 = 2.75 \checkmark$

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

$$\begin{aligned} 3(x+2) &= 10(x-5) \\ 3x+6 &= 10x-50 \\ -3x &\quad -3x \\ \hline 6 &= 7x-50 \\ +50 &\quad +50 \\ \hline 7x &= 56 \\ x &= 8 \end{aligned}$$

C: $\frac{3}{8-5} = \frac{10}{8+2}$
 $1 = 1 \checkmark$

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

$$\begin{aligned} 6(a+8) &= 15(a+1) \\ 6a+48 &= 15a+15 \\ -6a &\quad -6a \\ \hline 48 &= 9a+15 \\ -15 &\quad -15 \\ \hline 9a &= 33 \\ \frac{9a}{9} &\quad \frac{33}{9} \\ a &= 3.67 \end{aligned}$$

When in doubt
 round
 a decimals

C: $\frac{8+3.67}{15} = \frac{1+3.67}{6}$
 $.778 \approx .778 \checkmark$

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

Cross multiply.
 Then solve for w

$$\begin{aligned} 9 \cdot w &= 5(w-14) \\ 9w &= 5w-70 \\ -5w &\quad -5w \\ \hline 4w &= -70 \\ \frac{4w}{4} &\quad \frac{-70}{4} \\ w &= -17.5 \end{aligned}$$

Check in orig EQ

C: $\frac{-17.5}{5} = \frac{-17.5-14}{9}$
 $-3.5 = -3.5 \checkmark$

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

$$\begin{aligned} 18(7-2n) &= 7+2n \\ 126-36n &= 7+2n \\ +36n &\quad +36n \\ \hline 126 &= 7+38n \\ -7 &\quad -7 \\ \hline 119 &= 38n \\ \frac{119}{38} &\quad \frac{38n}{38} \\ n &= 3.13 \end{aligned}$$

C: $\frac{7-2(3.13)}{7+2(3.13)} = \frac{1}{18}$
 $.056 = .056 \checkmark$

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

CrossMULT

$$\begin{aligned} 11b &= 6(b-5) \\ 11b &= 6b-30 \\ -6b &\quad -6b \\ \hline 5b &= -30 \\ b &= -6 \end{aligned}$$

C: $\frac{11(-6)}{6} = \frac{-6-5}{1}$
 $-11 = -11 \checkmark$

Honors Algebra 1 - Chapter 2 Review #2

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?

Write a proportion

KI:
 * H₂O leaks 1.5 GAL every 5 min
 * Takes 18 min to stop

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

$$\frac{1.5 \text{ GAL}}{5 \text{ MIN}} = \frac{X}{18 \text{ MIN}}$$

Solve

$$\frac{(1.5)(18)}{5} = \frac{5X}{5}$$

$$X = 5.4$$

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
 Mango = $\frac{5}{3}$
 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 ≈ 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?

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

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

Proportion

$$\frac{0.004}{.2} = \frac{1920}{X}$$

$$X = (.2)(1920) \div .004$$

$$X = 96,000 \text{ oz}$$

X = # of oz of bread lifted

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

Honors Algebra 1 - Chapter 2 Review #2

① Exponents
H → L
② 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. $x(2x + 4) = 2x^2 + 4x$

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

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

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

SKILL PRACTICE 23

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

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

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

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

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

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

SKILL PRACTICE 24

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

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

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

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

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

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

Honors Algebra 1 - Chapter 2 Review #2

Section 4: Review Properties.

Properties and Axioms are the same:

SKILL PRACTICE 26

- Commutative axiom of addition
- Commutative axiom of multiplication
- Associative axiom of addition
- Associative axiom of multiplication

Think commute
Some order
()'s switch

- Additive identity
- Additive inverse
- Multiplicative identity
- Multiplicative inverse
- Distributive

X+0=X
Add opposites = 0
1 · X = X
MULT RECIPROCAL = 1
 $-\frac{3}{4}(-\frac{4}{3}) = 1$

Name the Property:

1. $2 + 3 = 3 + 2$ COMMUNATIVE (+)
3. $3 + (-3) = 0$ ADDITIVE INVERSE
opposites
4. $3 + 0 = 3$ IDENTITY (+)
6. $2 + (3 + 8) = (2 + 3) + 8$ ASSOCIATIVE (+)
7. $3(4) = (4)(3)$ COMMUNATIVE (*)
8. ~~If $4 + 3 = 7$ and $7 = 2 + 5$, then $4 + 3 = 2 + 5$.~~
9. $5(4 + x) = 20 + 5x$ DISTRIBUTIVE
5 · 4 + 5 · x
10. $x = 1 · x$ IDENTITY (*)
11. $x · (\frac{1}{x}) = 1$ MULT INVERSE
implied mult
13. $5(x - 6) = (x - 6) · 5$ COMMUNATIVE (*)
2 FACTORS = 5 and (x-6)
15. $2x + 4y = 2(x + 2y)$ DISTRIBUTIVE
16. $(2 · 3)(4) = (2)(3 · 4)$ ASSOCIATIVE (*)
17. $2 + (3x + 5) = 2 + 5 + 3x$ COMMUNATIVE (+)
19. $2 + (5 + 3x) = (2 + 5) + 3x$ ASSOCIATIVE (+)
20. $5x + 3x = (5 + 3) · x$ DISTRIBUTIVE

Section 5: Identify parts of an expression

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

Some variables to the same exponents

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

$-y^2, -2, 3yz^2, -y^2z, y^2, 5$
 $-y^2, y^2$ and $-2, 5$
 $-1, 3, -1, 1$ (in the order of the given expression)
 → are numbers: $-2, 5$

The number before the variable

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.

Honors Algebra 1 - Chapter 2 Review #2

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

8) $.1\bar{2}$ R

For $\sqrt{\quad}$'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. $6(3 - 4.5x) = 8.5 - 9x$

$$18 - 27x = 8.5 - 9x$$

$$18 = 8.5 + 18x$$

$$\frac{9.5}{18} = \frac{18x}{18}$$

$$x = .527$$

$$x \approx .53$$

$$C: 6(3 - 4.5(.53)) = 8.5 - 9(.53)$$

$$3.69 \approx 3.73 \checkmark$$

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

$$9x + 12x - 18 = 25 - x - 3$$

$$21x - 18 = -x + 22$$

$$22x = 40$$

$$x = 1.818$$

$$x \approx 1.82$$

$$C: 9(1.82) + 3(4(1.82) - 6) =$$

$$25 - (1.82 + 3)$$

$$20.22 = 20.18 \checkmark$$

Honors Algebra 1 - Chapter 2 Review #2

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

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

$$\begin{array}{r} 6x - 18 \\ -6x \quad -6x \\ \hline \end{array}$$

$$-18 = -18 \text{ (T)}$$

$X = \text{ALL REAL NUMBERS}$

← Write this

Tip Check $x=0$

C: $2(-4) - 10 = -15 + 3(-1)$
 $-18 = -18 \checkmark$

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

Skill Practice 34

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

$$4 - x + 3 = x + 7$$

$$-x + 7 = x + 7$$

$$\begin{array}{r} +x \quad +x \\ \hline \end{array}$$

$$\begin{array}{r} 7 = 2x + 7 \\ -7 \quad -7 \\ \hline \end{array}$$

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

$$x = 0$$

← Keep Going; You still have a variable

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

$$7 = 7 \checkmark$$

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

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

SKIP

Same problem above