ALGEBRA 2 PACKET – ARNETT, GARCIA, TAYLOR
WEEKS 5-7 (APRIL 27 – MAY 15)

Students are encouraged to use the suggested pacing schedule as we move forward and learn NEW material. We are going to finish the chapter on Rational Expressions & Functions and then assess 5/14-5/15. For each lesson, teachers have provided a video with instruction and a completed power point with examples. The intent is for you to **FIRST**, watch the video and work through the examples. **SECOND**, do the attached assignments. **THIRD**, reach out to your teacher if you have questions. **FOURTH**, submit the assignment via Remind, Email, Teams (Taylor) or Focus. Parents and students are encouraged to connect with the teachers via Remind or email.

ADDITIONAL RESOURCES (video lessons & practice activities)
ClassLink >> Pearson Realize (Textbook)
ClassLink >> Algebra Nation
https://www.khanacademy.org/resources/teacher-essentials

CONTACT INFORMATION

Mr. Jacob Arnett	
Remind: Per 1: @arnetta2-1 Per 4: @arnetta2-4 Per 2: @arnetta2-2 Per 5: @arnettatm5 Per 3: @arnetta2-3 Per 6: @arnettatm6	**Email:** arnettj@leonschools.net
Mrs. Kim Garcia	
Remind: Honors: @leonalg2h General: @leonalg219	**Email:** garciak@leonschools.net
Mrs. Martina Taylor	
Remind: Per 5: @5leonalg2 Per 6: @6leonalg2	**Email:** taylorm2@leonschools.net

DAILY PACING SCHEDULE		DUE DATE
4/27	Continue to watch video 8.1 & 2.2, complete notes on 8.1 & 2.2, Do WS 8.1 & 2.2	4/28
4/28 – 4/30	Watch video 8.4, complete notes on 8.4, Do WS 8.4	5/1
5/1 – 5/5	Watch video 8.5, complete notes on 8.5, Do WS 8.5	5/6
5/6 – 5/8	Watch video 8.6, complete notes on 8.6, Do WS 8.6	5/11
5/11 - 5/12	Test 8.1, 8.4-8.6 & 2.2 Review WS A	5/13
5/13 – 5/14	Test 8.1, 8.4-8.6 & 2.2 Review WS B	5/15
5/14-5/15	Test on 8.1, 8.4-8.6 & 2.2 (More info to follow via Remind or teacher websites)	5/15

8.1 Inverse Variation
&
2.2 Direct Variation

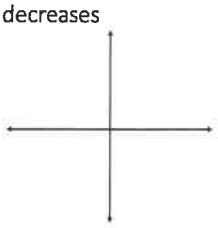
Learning goals

- recognize and use inverse variation
- write and interpret direct variation equations
- use joint and other variations

Inverse Variation:
as the absolute value of x increases, the absolute value of y decreases

$\boxed{y = \frac{k}{x}}$

$k \neq 0$



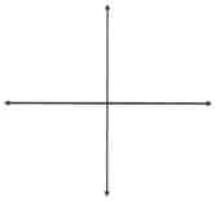
$\boxed{k = xy}$

'k' is the constant of variation

Direct Variation:
as the absolute value of x increases, the absolute value of y increases

$\boxed{y = kx}$

$k \neq 0$



$\boxed{k = \frac{y}{x}}$

'k' is the constant of variation

Ex 1

Direct, inverse, or neither? Find k.

x	y
3	0.7
6	0.35
21	0.1

Ex 2

Direct, inverse, or neither? Find k.

x	y
−2	6
−1.3	5
7	−4

Ex 3

Direct, inverse, or neither? Find k.

x	y
−2	5
4	−10
6	−15

Ex 4 Suppose that x and y vary inversely. If x = 7 and y = 4, write a function.

Ex 5 $\boxed{y = kx}$

Are these direct variations?

$3y = 7x + 7$ $5x = 2y$

Ex 6 $\boxed{k = \frac{y}{x}}$ $\boxed{y = kx}$

- A dripping faucet wastes a cup of water if it drips for three minutes.
- The amount of water wasted varies directly with the amount of time the faucet drips.
- Write an equation.

How long must it drip to waste 4.5 cups?

Combined Variations

- y varies directly with the square of x:
- y varies inversely with the cube of x:
- z varies jointly with x and y and inversely with w:
- z varies directly with x and inversely with the product of w and y:

Ex 7

The mass *m* of a moving object is related to its kinetic energy *k* and its velocity *v* by $\boxed{m = \frac{2k}{v^2}}$.

Describe the relationship using a combined variation.

Ex 8

Describe the relationship using a combined variation.

$$\boxed{A = \frac{1}{2}h(b_1 + b_2)}$$

Ex 9

- z varies directly as *x* and inversely as the square of *y*.
- When x = 35, y = 7, and z = 50.
- Write a function & find z when x = 5 and y = 10.

two formulas:

$y = \frac{K}{x}$ — INVERSE

$y = Ky$ — DIRECT

line w/ y int = 0

8.1 Inverse Variation
& 2.2 Direct Variation

Inverse Variation

$y = \frac{k}{x}$

$k \neq 0$

So $k = xy$

'k' is the constant of variation

Direct Variation

a linear equation in the form $y = kx$ where k cannot = 0

$k = \frac{y}{x}$

must find K for all points - do either $K = xy$ or $K = \frac{y}{x}$ to see which one gets all the same K values

$K = \frac{y}{x}$ | $K = xy$

$\frac{.7}{3}$ (x7) 2.1

= 2.1

$\frac{.35}{6}$ = 2.1

Ex 1 INV

Direct, inverse, or neither?

$y = \frac{2.1}{x}$

Ex 2

Direct, inverse, or neither?

neither

$K = \frac{y}{x}$: $K = -3$, $K = -3.8$ NO

$K = xy$: $K = -12$, $K = -6.5$ NO

Ex 3

Direct, inverse, or neither?

direct

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

$K = \frac{y}{x}$: $K = -2.5$, -2.5, -2.5 ✓

$K = xy$: -10, -40 NO

$y = Kx$ (3, 1)

$y = \frac{K}{x}$ $y = \frac{K}{x}$

Ex 4 $K = 28$

Suppose that x and y vary inversely. If $x = 7$ and $y = 4$ write a function.

$y = \frac{28}{x}$

Ex 5

Are these direct variations?

$3y = 7x - 7$ — no

$5x = 2y$ — yes

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

direct variation is JUST $y = Kx + 0$ there can't be a constant (y-int)

Ex 6

A dripping faucet wastes a cup of water if it drips for three minutes. The amount of water wasted varies directly with the amount of time the faucet drips. Write an equation.

$y = \frac{1}{3}x$

How long must it drip to waste 4.5 cups?

(time, cups)

$1 = 3K$

$K = \frac{1}{3}$

$4.5 = \frac{1}{3}x$

$\frac{27}{2}$ min

or

13.5

must know these words

We will never mention the # in the problem

Combined Variations

y varies directly with the square of x $y = kx^2$

y varies inversely with the cube of x $y = \frac{k}{x^3}$

z varies jointly with x and y and inversely with w $z = \frac{kxy}{w}$

z varies directly with x and inversely with the product of w and y $z = \frac{kx}{wy}$

Ex 7

The mass m of a moving object is related to its kinetic energy k and its velocity v by $m = \frac{2k}{v^2}$

Describe the relationship using a combined variation

m varies directly with K & inv w/ the square of v

(didn't mention the 2)

Ex 8

Describe the relationship using a combined variation

$A = \frac{1}{2}h(b_1 + b_2)$

A varies jointly w/ the h & the sum of b_1 & b_2

(didn't mention the $\frac{1}{2}$)

Ex 9

z varies directly as x and inversely as the square of y. When x = 35, y = 7, and z = 50, write a function and find z when x = 5 and y = 10

$z = \frac{Kx}{y^2}$ $z = \frac{?x}{y^2}$ 3.5

$z = \frac{Kx}{y^2}$

$50 = \frac{K(35)}{49}$

$K = 70$

so $z = \frac{70x}{y^2}$

then $z = \frac{70(5)}{100}$

$z = 3.5$

Algebra 2
WS 8.1&2.2 Direct and Indirect Variation

Name:_____
Date:_____ Pd:____

Determine whether *y* varies directly with *x*. If so, find the constant of variation.

1. $y = 12x$

2. $y = 4x - 3$

For problem numbers 3-4, *y* varies directly with *x*.

3. If $y = 4$ when $x = -2$, find *x* when $y = 6$.

4. If $y = 7$ when $x = 2$, find *x* when $y = 3$.

5. **Distance** For a given speed, the distance traveled varies directly with the time. Kate's school is 5 miles away from her home and it takes her 10 minutes to reach the school. If josh lives 2 miles from school and travels at the same speed as Kate, how long will it take him to reach the school?

Is the relationship between the values in each table a *direct variation*, and *inverse variation*, or *neither*? Write equations to model the direct and inverse variations.

6.

x	y
3	15
8	40
10	50
22	110

7.

x	y
3	14
5	8.4
7	6
10.5	4

Is the relationship between the values in each table a *direct variation*, and *inverse variation*, or *neither*? Write equations to model the direct and inverse variations.

8.

x	y
0.5	1
2.1	4.2
3.5	7
11	22

9.

x	y
0.1	3
3	0.1
6	0.05
24	0.0125

10. **Painting** The number of buckets of paint *n* needed to paint a fence varies directly with the total area *a* of the fence and inversely with the amount of paint *p* in a bucket. It takes three 1-gallon buckets of paint to paint 72 square feet of fence. How many 1-gallon buckets will be needed to paint 90 square feet of fence?

Write the function that models each variation. Find *z* when $x=4$ and $y=9$.

11. *Z* varies directly with *x* and inversely with *y*. When $x=6$ and $y=2$, $z=15$.

12. *Z* varies jointly with *x* and *y*. When $x=2$ and $y=3$, $z=60$.

13. *Z* varies inversely with the product of *x* and *y*. When $x=2$ and $y=4$, $z=0.5$.

8.4
Rational Expressions

Learning goals
- simplify rational expressions
- multiply and divide rational expressions

1

Simplest Form

rational expression : quotient of two polynomials
-- in simplest form when the numerator and denominator have NO common factors.

To reach simplest form:
- factor
- simplify
- state restrictions

2

Ex 1
Simplify.

$$\frac{x^2 - 6x - 16}{x^2 + 5x + 6}$$

3

Ex 2
Multiply, state any restrictions on the variables.

$$\frac{x^2+5x-6}{x-5} \cdot \frac{x^2-25}{x^2-7x+6}$$

4

Simplify: Special cases

$\frac{(r-s)}{(r-s)}$ $\frac{(r-s)}{(s-r)}$

$\frac{(r+s)}{(s+r)}$ $\frac{(r-s)}{(r+s)}$

5

Ex 3

Divide, state any restrictions on the variables.

$$\frac{3-y}{2x^2+9x-5} \div \frac{6y-18}{2x^2-15x+7}$$

6

8.4
Rational Expressions

Learning goals
- simplify rational expressions
- multiply and divide rational expressions

1

Simplest Form

rational expression : quotient of two polynomials
-- in simplest form when the numerator and denominator have NO common factors.

To reach simplest form:
- factor
- simplify
- state restrictions

2

Ex 1
Simplify.

$$\frac{x^2-6x-16}{x^2+5x+6}$$

Factor numerator and denominator:
$$\frac{(x-8)(x+2)}{(x+3)(x+2)}$$

Find restrictions:
(zeros of the denominator)
$x \neq -3, -2$

Cancel common factors:
$$\frac{(x-8)\cancel{(x+2)}}{(x+3)\cancel{(x+2)}}$$
$$= \frac{x-8}{x+3}$$

Answer:
$$\frac{x-8}{x+3} \quad (x \neq -3, -2)$$

3

Ex 2
Multiply, state any restrictions on the variables.

$$\frac{x^2+5x-6}{x-5} \cdot \frac{x^2-25}{x^2-7x+6}$$

Factor both numerators and denominators:
$$\frac{(x-1)(x+6)}{(x-5)} \cdot \frac{(x-5)(x+5)}{(x-6)(x-1)}$$

Combine fractions:
$$\frac{(x-1)(x+6)(x-5)(x+5)}{(x-5)(x-6)(x-1)}$$

Cancel common factors:
$$\frac{\cancel{(x-1)}(x+6)\cancel{(x-5)}(x+5)}{\cancel{(x-5)}(x-6)\cancel{(x-1)}}$$

Find restrictions:
(zeros of the denominator)
$x \neq 5, 6, 1$

Answer:
$$\frac{(x+6)(x+5)}{x-6}$$
$(x \neq 5, 6, 1)$

4

Simplify: Special cases

$\frac{(r-s)}{(r-s)} = \frac{1}{1}$

$\frac{(r-s)}{(s-r)} = \frac{-1}{1}$ OR $\frac{1}{-1}$

$\frac{(r+s)}{(s+r)} = \frac{1}{1}$

$\frac{(r-s)}{(r+s)}$ Does not simplify

5

Ex 3

Divide, state any restrictions on the variables.

$$\frac{3-y}{2x^2+9x-5} \div \frac{6y-18}{2x^2-15x+7}$$

Keep first fraction
Change ÷ to ∗
Flip second fraction

$$\frac{3-y}{2x^2+9x-5} \cdot \frac{2x^2-15x+7}{6y-18}$$

Factor both numerators and denominators:

$$\frac{(3-y)}{(2x-1)(x+5)} \cdot \frac{(2x-1)(x-7)}{6(y-3)}$$

Combine fractions and cancel:

$$\frac{-1\cancel{(3-y)}\cancel{(2x-1)}(x-7)}{\cancel{(2x-1)}(x+5)6\cancel{(y-3)}}$$

Find restrictions:
(zeros of the denominator or zero of divisor)
$x \neq 1/2, -5, 7;\ y \neq 3$

Answer:

$$\frac{-(x-7)}{6(x+5)}$$

$(x \neq 1/2, -5, 7;\ y \neq 3)$

6

A#_____

Algebra 2
8.4 Rational Expressions WS

Name _____

Date _____ Period _____

1. $\dfrac{v^2+v-56}{v^2-2v-80} \div \dfrac{1}{v-10}$

2. $\dfrac{n+3}{n+2} \div \dfrac{n^2+2n-3}{n^2-2n+1}$

3. $\dfrac{x+3}{4} \bullet \dfrac{3x-18}{3x+9}$

4. $\dfrac{x-8}{x^2-2x-48} \bullet \dfrac{4x^2+40x}{x+10}$

5. $\dfrac{2y^2-12y}{y+5} \div \dfrac{y-6}{y+5}$

6. $\dfrac{1}{n+9} \div \dfrac{6-n}{3n-18}$

7. $\dfrac{28-7a}{a-4} \bullet \dfrac{1}{a+10}$

8. $\dfrac{2}{v^2-12v+27} \bullet \dfrac{v^2-12v+27}{3}$

9. $\dfrac{1}{5p^2} \div \dfrac{9p-36}{5p^3-35p^2}$

10. $\dfrac{x^2+7x-8}{x+8} \bullet \dfrac{x+5}{9x-9}$

11. $\dfrac{x^2-16}{9-x} \bullet \dfrac{x^2+x-90}{x^2+14x+40}$

12. $\dfrac{10x^2-20x}{40x^3-80x^2} \bullet \dfrac{16x^3+80x^2}{6x+30}$

8.5
Adding & Subtracting Rational Expressions

Learning goal
- add and subtract rational expressions

1

Ex 1

$$\frac{2}{5}+\frac{3}{4}$$

Ex 2

$$\frac{4}{3}+\frac{2}{x}$$

2

Ex 3

$$\frac{3c}{2c-1}-\frac{5c+1}{2c-1}$$

3

Ex 4

Find the LCM of $2x^2-8x+8$ and $15x^2-60$

- Factor each expression.
- Write each factor the greatest number of times it appears in either expression.

4

Ex 5

- Find the LCM of: $5x^2+15x+10$ and $2x^2-8$

5

Ex 6 Simplify

$$\frac{1}{3x^2+21x+30}+\frac{4x}{3x+15}$$

6

Ex 7 Simplify

$$\frac{2x}{x^2-2x-3}-\frac{3}{4x+4}$$

7

Complex Fractions

A complex fraction has a fraction in the numerator, denominator, or both.

Ex 8 Simplify

$$\frac{\frac{2}{x+y}}{3} \qquad \frac{1}{1+\frac{x}{y}}$$

8

Ex 9

$$\frac{\frac{1}{x}+\frac{1}{y}}{\frac{2}{y}-\frac{1}{x}}$$

9

Ex 10

$$\frac{\frac{x-2}{x-1}-\frac{2}{x+1}}{\frac{3}{x-1}-\frac{1}{x+1}}$$

10

8.5
Adding & Subtracting Rational Expressions

Learning goal
- add and subtract rational expressions

1

Ex 1 Least Common Denominator (LCD): 20

$\frac{4*2}{4*5}+\frac{3*5}{4*5}$ Multiply each fraction to get LCD on the bottom

$\frac{8}{20}+\frac{15}{20}$ $=\frac{23}{20}$

Ex 2 LCD: $3x$

$\frac{x*4}{x*3}+\frac{2*3}{x*3}$ $=\frac{4x}{3x}+\frac{6}{3x}$ $=\frac{4x+6}{3x}$ $=\frac{2(2x+3)}{3x}$ $(x\neq 0)$

2

Ex 3 LCD: $2c-1$

$\frac{3c}{2c-1}-\frac{5c+1}{2c-1}=\frac{3c-(5c+1)}{2c-1}=\frac{-2c-1}{2c-1}$

$=\frac{-(2c+1)}{2c-1}$ $(c\neq 1/2)$

3

Ex 4

Find the LCM of $2x^2-8x+8$ and $15x^2-60$

- Factor each expression.

$2x^2-8x+8=2(x-2)^2$ $15x^2-60=15(x-2)(x+2)$

- Write each factor the greatest number of times it appears in either expression.

LCM: $2*15(x-2)^2(x+2)$
OR
$30(x-2)^2(x+2)$

4

Ex 5

- Find the LCM of: $5x^2+15x+10$ and $2x^2-8$

$5x^2+15x+10=5(x+2)(x+1)$

$2x^2-8=2(x-2)(x+2)$

LCM: $2*5(x+2)(x+1)(x-2)$
OR
$10(x+2)(x+1)(x-2)$

5

Ex 6 Simplify LCD: $3(x+2)(x+5)$

$$\frac{1}{3x^2+21x+30}+\frac{4x}{3x+15}$$

Factor:

$$\frac{1}{3(x+2)(x+5)}+\frac{4x}{3(x+5)}$$

Multiply by missing factors:

$$\frac{1}{3(x+2)(x+5)}+\frac{4x(x+2)}{3(x+5)(x+2)}$$

Add (just numerators):

$$\frac{1+4x(x+2)}{3(x+5)(x+2)}=\frac{4x^2+8x+1}{3(x+5)(x+2)}$$

Simplify, state restrictions:

$$\frac{4x^2+8x+1}{3(x+5)(x+2)}$$

$(x\neq -5,-2)$

6

Ex 7 Simplify LCD: $4(x-3)(x+1)$

$$\frac{2x}{x^2-2x-3}-\frac{3}{4x+4}$$

Factor:

$$\frac{2x}{(x-3)(x+1)}-\frac{3}{4(x+1)}$$

Multiply by missing factors:

$$\frac{4\cdot 2x}{4(x-3)(x+1)}-\frac{3(x-3)}{4(x+1)(x-3)}$$

Subtract (just numerators):

$$\frac{8x-3(x-3)}{4(x-3)(x+1)}=\frac{8x-3x+9}{4(x-3)(x+1)}$$

Simplify, state restrictions:

$$\frac{5x+9}{4(x-3)(x+1)}$$

$(x\neq 3,-1)$

7

Complex Fractions

A complex fraction has a fraction in the numerator, denominator, or both.

Ex 8 Simplify Multiply the numerator and denominator by the LCD

$$\frac{\frac{2}{x+y}}{3}\quad \cdot(x+y)\quad \cdot(x+y)$$

$$=\frac{2(x+y)}{3(x+y)}=\frac{2}{3(x+y)}$$

$$\frac{1}{y\cdot 1+\frac{x}{y}}\quad \cdot y\quad \cdot y$$

$$=\frac{y}{y+\frac{xy}{y}}=\frac{y}{y+x}$$

8

Ex 9

$$\frac{\frac{1}{x}+\frac{1}{y}}{\frac{2}{y}-\frac{1}{x}} \quad \begin{matrix} xy\cdot \\ xy\cdot \end{matrix} \quad \cdot xy \quad \cdot xy$$

$$= \frac{\frac{xy}{x}+\frac{xy}{y}}{\frac{2xy}{y}-\frac{xy}{x}} = \frac{y+x}{2x-y}$$

9

Ex 10

$$(x+1)(x-1)\cdot \quad \frac{\frac{x-2}{x-1}-\frac{2}{x+1}}{\frac{3}{x-1}-\frac{1}{x+1}} \quad \cdot (x+1)(x-1)$$

$$(x+1)(x-1)\cdot \quad \cdot (x+1)(x-1)$$

$$= \frac{(x+1)(x-2)-2(x-1)}{3(x+1)-(x-1)} = \frac{x^2-x-2-2x+2}{3x+3-x+1}$$

$$= \frac{x^2-3x}{2x+4} = \frac{x(x-3)}{2(x+2)}$$

10

A#_____

Algebra 2
8.5 Adding & Subtracting Rational Expressions

Name _____

Date _____ Period _____

Add or subtract each expression.

1. $\frac{u-v}{8v}+\frac{6u-3v}{8v}$

2. $\frac{3}{n-5}+\frac{6}{3n-8}$

3. $\frac{6}{x-1}-\frac{5x}{4}$

4. $\frac{4}{x+1}-\frac{2}{x+2}$

5. $\frac{3}{x+7}+\frac{4}{x-8}$

6. $\frac{3}{x+6}+\frac{7}{x-2}$

7. $\frac{2}{x+1}-\frac{3}{x+5}$

8. $\frac{5}{n+5}+\frac{4n}{2n+6}$

9. $\frac{2x}{5x+4}+\frac{6x}{2x+3}$

10. $\frac{3}{x-8}+\frac{7}{x+3}$

11. $\frac{7n}{n+1}+\frac{8}{n-7}$

12. $\frac{2}{n+8}+\frac{4}{n+1}$

13. $\dfrac{\frac{a}{25}-\frac{a}{5}}{a}$

14. $\dfrac{\frac{5}{4}}{\frac{5}{m}-\frac{4}{m}}$

15. $\dfrac{\frac{2}{x}-5}{\frac{6}{x}-3}$

16. $\dfrac{\frac{x+3}{x-3}}{\frac{x^2-9}{3x-9}}$

17. $\dfrac{\frac{5}{x+3}}{2+\frac{1}{x+3}}$

18. $\dfrac{\frac{3}{x+1}}{\frac{5}{x-1}}$

8.6 Solving Rational Equations

AN EQUATION THAT CONTAINS AT LEAST ONE RATIONAL EXPRESSION.

CHECK FOR EXTRANEOUS SOLUTIONS

1

Ex 1 $\frac{1}{x-3}=\frac{6x}{x^2-9}$

2

Ex 2 $\frac{3}{5x}-\frac{4}{3x}=\frac{1}{3}$

3

Ex 3 $\frac{4}{x}-\frac{3}{x+1}=1$

4

Ex 4 $\frac{x-1}{x^2+3x+2}+\frac{2x}{x+2}=\frac{x-1}{x+1}$

5

8.6 Solving Rational Equations

AN EQUATION THAT CONTAINS AT LEAST ONE RATIONAL EXPRESSION.

CHECK FOR EXTRANEOUS SOLUTIONS

1

Ex 1 $\frac{1}{x-3} = \frac{6x}{x^2-9}$

Method 1: Cross multiply if there is only one rational expression on either side of the equal sign.

$1 \cdot (x^2 - 9) = 6x \cdot (x - 3)$

$x^2 - 9 = 6x^2 - 18x$

$0 = 5x^2 - 18x + 9$

$0 = (5x - 3)(x - 3)$

$x = 3$ or $\frac{3}{5}$

Check $x = 3$

$\frac{1}{3-3} = \frac{6(3)}{(3)^2-9}$

$x = 3$ is extraneous! *Can't divide by 0*

Check $x = 3/5$

$\frac{1}{\frac{3}{5}-3} = \frac{6\left(\frac{3}{5}\right)}{\left(\frac{3}{5}\right)^2-9}$

Final Answer → $x = 3/5$ works! *Use your calculator to help!*

2

Ex 2 $\frac{3}{5x} - \frac{4}{3x} = \frac{1}{3}$

Method 2: Multiply each numerator by the LCD.

LCD: $15x$

$\frac{3 \cdot 15x}{5x} - \frac{4 \cdot 15x}{3x} = \frac{1 \cdot 15x}{3}$

$\frac{45x}{5x} - \frac{60x}{3x} = \frac{15x}{3}$

$9 - 20 = 5x$

$x = -\frac{11}{5}$ → *Final Answer*

Check $x = -11/5$

$\frac{3}{5\left(-\frac{11}{5}\right)} - \frac{4}{3\left(-\frac{11}{5}\right)} = \frac{1}{3}$

$x = -11/5$ works!

3

Ex 3 $\frac{4}{x} - \frac{3}{x+1} = 1$

LCD: $x(x+1)$

$\frac{4 \cdot x(x+1)}{x} - \frac{3 \cdot x(x+1)}{x+1} = 1 \cdot x(x+1)$

$4(x+1) - 3x = x^2 + x$

$x + 4 = x^2 + x$

$0 = x^2 - 4$

$x = 2$ or -2 → *Final Answer*

Check $x = 2$

$\frac{4}{2} - \frac{3}{2+1} = 1$

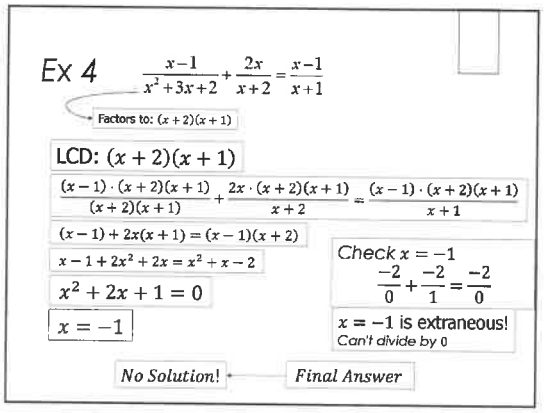
$x = 2$ works!

Check $x = -2$

$\frac{4}{-2} - \frac{3}{-2+1} = 1$

$x = -2$ works, too!

4


Ex 4 $\frac{x-1}{x^2+3x+2}+\frac{2x}{x+2}=\frac{x-1}{x+1}$
Factors to: $(x+2)(x+1)$
LCD: $(x+2)(x+1)$
$\frac{(x-1)\cdot(x+2)(x+1)}{(x+2)(x+1)}+\frac{2x\cdot(x+2)(x+1)}{x+2}=\frac{(x-1)\cdot(x+2)(x+1)}{x+1}$
$(x-1)+2x(x+1)=(x-1)(x+2)$
$x-1+2x^2+2x=x^2+x-2$
$x^2+2x+1=0$
$x=-1$
Check $x=-1$
$\frac{-2}{0}+\frac{-2}{1}=\frac{-2}{0}$
$x=-1$ is extraneous!
Can't divide by 0
No Solution!
Final Answer

5

A#____

Algebra 2
8.6 Rational Equations WS. State any extraneous solutions.

Name _____

Date _____ Period ____

1. $\frac{1}{9}+\frac{1}{x}=\frac{4}{9}$

2. $\frac{2}{5}+\frac{1}{x}=\frac{1}{2}$

3. $\frac{5}{4x}+\frac{1}{x}=3$

4. $\frac{7}{x-3}=\frac{4}{x}$

5. $\frac{8}{5x}-\frac{2}{3x}=\frac{4}{15}$

6. $\frac{x+5}{4x}+\frac{11}{12}=\frac{2}{3x}$

7. $\frac{x}{2x+6}-\frac{1}{x+3}=1$

8. $\frac{1}{x+5}=\frac{2}{x^2-25}$

9. $\frac{1}{x+3}=\frac{7}{x-3}-\frac{2}{x^2-9}$

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

11. $\frac{x+5}{x^2-x}-\frac{3}{x}=\frac{1}{x-1}$

12. $\frac{x+3}{x}-\frac{x+2}{x+5}=\frac{1}{x}$

A#____

Algebra 2
RWS 2.2, 8.1, 8.4 – 8.6 a

Name _____

Date _____ Period ____

State whether the relationship represents a direct variation, inverse variation, or neither. Write the equation to model direct or inverse variations.

1.

x	y
3	15
4	20
6	32
7	38

2.

x	y
12	8
9	6
6	4
3	2

Write the function that models each variation; then evaluate the variation.

3. z varies jointly with x and the square of y. Find k if $z=36, x=3,$ and $y=2$. Now find z if $x=8$ and $y=6$.

Multiply or divide and state any restrictions.

4. $\dfrac{3x+18}{x^2+4x-12} \bullet \dfrac{x-3}{x^2-9}$

5. $\dfrac{2x^2+10x-12}{3x+15} \cdot \dfrac{4x+20}{(x-1)^2}$

Simplify each complex fraction.

6. $\dfrac{\dfrac{2x}{x+3}}{\dfrac{6x^2}{x^2+6x+9}}$

7. $\dfrac{2-\dfrac{y}{x}}{-1+\dfrac{2x}{y}}$

Solve each rational equation. Be sure to state any extraneous solutions, if necessary.

8. $\dfrac{x+5}{x^2-2x}-1=\dfrac{1}{x^2-2x}$

A#_____

Algebra 2
RWS 2.2, 8.1, 8.4 – 8.6 b

Name _____

Date _____ Period _____

State whether the relationship represents a direct variation, inverse variation, or neither. Write the equation to model direct or inverse variations.

1.

x	y
8	14
5	22.4
2	56
0.8	140

2.

x	y
2	10.4
3.5	18.2
5	26
6.5	33.8

Write the function that models each variation; then evaluate the variation.

3. y varies directly with x and inversely with z. Find k if $y=14, x=7$, and $z=9$. Now find y if $x=3$ and $z=12$.

4. A varies jointly with l and w. Find k if $l=5, w=6$, and $A=15$. Now find A if $l=10$ and $w=7$.

Multiply or divide and state any restrictions.

5. $\dfrac{2-x}{3x-6} \div \dfrac{x^2+x}{15x+15}$

6. $\dfrac{4x}{9x^3} \div \dfrac{16x+4}{x^2+x}$

Simplify each complex fraction.

7. $\dfrac{\dfrac{4}{x+2}-1}{\dfrac{1}{y}}$

Solve each rational equation. Be sure to state any extraneous solutions, if necessary.

8. $1=\dfrac{1}{x^2+2x}+\dfrac{x-1}{x}$

9. $\dfrac{1}{y-2}+\dfrac{1}{y^2-7y+10}=\dfrac{6}{y-2}$

Name _____

Algebra 2
8.1, 2.2, 8.4 – 8.6 Test A

Period _____

State whether the relationship represents a direct variation, inverse variation, or neither. If the table represents a variation, write the equation to model the variation. If it doesn't, write "NA".

1.

x	y
5	30
7	42
9	54
11	66

2.

x	y
3	24
4	18
8	9
9	8

Answer each question regarding the following variation.

3.

A. z varies jointly with x and y and inversely with the cube of r. Write the function to model this variation.

B. Find constant of variance when if $z = 56$ when $r = 2$, $x = 7$, and $y = 2$.

C. Find z when $r = 3$, $x = 6$, and $y = 12$.

Choose the best answer.

4. Which expression is equivalent to $\frac{\frac{2}{x}+5}{\frac{1}{y}}$? Use a capital letter.

A. $\frac{10y}{x}$ **B.** $\frac{5x+2}{xy}$ **C.** $\frac{2y+5xy}{x}$ **D.** $\frac{x}{2x+5xy}$

Answers

1. variation type _____

equation: _____

2. variation type _____

equation _____

3.

A. function _____

B. $k =$ _____

C. $z =$ _____

4. _____

Simplify into a single rational expression in factored form; state any restrictions. If there are no restrictions, write "none".

5. $\frac{x^2-1}{x^2+2x-3} - \frac{x+1}{x+3}$

6. $\frac{-16}{x^2-4} + \frac{x-6}{2x+4}$

7. $\frac{x^2-2x-24}{x^2+7x+12} \cdot \frac{1-x^2}{x-6}$

8. $\frac{4x^2-2x}{x^2+5x+4} \div \frac{2x}{x^2+2x+1}$

Solve each rational equation. Be sure to state any extraneous solutions, if necessary. If there are no extraneous solutions, write "none".

9. $\frac{2}{x+3} + \frac{3}{x-4} = \frac{2x-2}{x^2-x-12}$

10. $\frac{1}{x-4} = \frac{x}{x^2-16}$

Answers

5. _____

restrictions _____

6. _____

restrictions _____

7. _____

restrictions _____

8. _____

restrictions _____

9. _____

extraneous _____

10. _____

extraneous _____