

Math 9
Final Exam Review

Please take your time and ensure you read through each question before answering. If you are unsure, please ask for help. Good luck!

Chapter 3 - Rationals

1. Convert the following to an improper fraction:

$$2\frac{2}{3} = \frac{8}{3}$$

2. Convert to a mixed number:

$$\frac{7}{2} = 3\frac{1}{2}$$

3. Add the following fractions:

$$\frac{2}{7} + \frac{3}{7} = \frac{5}{7}$$

4. Subtract the following:

$$2\frac{2}{5} - \frac{2}{10} = \frac{4}{10} - \frac{2}{10} = \frac{2}{10} = \frac{1}{5}$$

* COMMON DENOMINATOR

5. Multiply the following:

$$\frac{1}{2} \times \frac{3}{5} = \frac{3}{10}$$

6. Divide the following:

$$\frac{3}{4} \div \frac{2}{9} = \frac{3}{4} \times \frac{9}{2} = \frac{27}{8} = 3\frac{3}{8}$$

7. Solve, leave your answer in lowest terms

$$\frac{2}{3} + \left(-\frac{5}{6}\right) = \frac{2}{3} - \frac{5}{6} = \frac{4}{6} - \frac{5}{6} = -\frac{1}{6}$$

8. Solve, leave your answer in lowest terms

$$2\frac{2}{3} + \left(-2\frac{5}{6}\right) = \frac{8}{3} - \frac{17}{6} = \frac{8}{3} - \frac{17}{6} \times \frac{2}{2} = \frac{8}{3} - \frac{17}{3} = -\frac{9}{3} = -3$$

Chapter 2 - Powers

1. Complete the following table.

6^4	Base =	6
	Exponent =	4
	Repeated Multiplication =	$6 \times 6 \times 6 \times 6$
	Final Answer =	1296

2. Write as a single power:

a) $3 \times 3 \times 3 \times 3 \times 3 =$

3^5

b) $(-2)(-2)(-2)(-2)(-2)(-2) =$

$(-2)^6$

3. Evaluate each power:

a) 10^3

$10 \times 10 \times 10$

1000

b) 234234^0

1

4. Solve:

a) $5^3 - 3^2$

$= 125 - 9$

$= 116$

b) $4^3 + (-2)^4$

$= 64 + 16$

$= 80$

5. Write each as a single power:

a) $21^4 \times 21^7$

$21^{4+7} = 21^{11}$

b) $(-6)^8 \div (-6)^3$

$(-6)^{8-3} = (-6)^5$

c) $3^7 \times 3^6 \div 3^5$

$3^{13} \div 3^5$

3^8

6. Write each in standard form (no exponents)

a) $(10^6 \div 10^3)^2$

$(10^3)^2$

10^6

1000000

b) $(5^2)^6 \div (5^3)^4$

$5^{12} \div 5^{12}$

1

c) $\frac{(-12)^2 \times (-12)^4}{(-3)^2 - 12^0}$

$\frac{(-12)^6}{9-1} = \frac{2985984}{8}$

$= 373248$

Chapter 5 - Polynomials

1. Complete the table below

<u>Polynomial</u>	<u>Coefficient</u>	<u>Constant</u>	<u>Variable</u>	<u>Type of Polynomial</u>	<u>Degree</u>
$4n^3 + 8$	4	8	n	BINOMIAL	3

2. Complete the following:

$$a) (4n^3 + 6) + (4n^3 - 1) =$$

$$8n^3 + 5$$

$$b) (7n + 6) - (3n - 2) =$$

$$-3n + 2$$

$$4n + 8$$

$$c) (3n)(6n^4) =$$

$$18n^5$$

$$d) \frac{8n^4}{2n} =$$

$$4n^3$$

3. Evaluate the following:

$$a) (7n - 5n^2 + 9) + (8 - 7n + 2n^2)$$

$$-3n^2 + 17$$

$$b) (8n^4 + 7 + 3n^2) - (-2n^2 + 5 - 2n^4)$$

$$+ 2n^2 - 5 + 2n^4$$

$$10n^4 + 5n^2 - 12$$

$$c) (-5)(8x^5 + 3x^3 - 9)$$

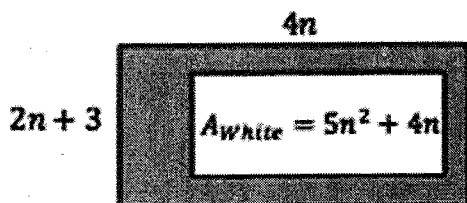
$$-40x^5 - 15x^3 + 45$$

$$d) \frac{36x^5 - 18x^7 + 27x^3}{9x^3}$$

$$4x^2 - 2x^4 + 3$$

$$-2x^4 + 4x^2 + 3$$

4. Find the area of the shaded region:

Formula $\rightarrow A = L \times W$

$$4n(2n + 3)$$

$$8n^2 + 12n - 5n^2 + 4n$$

$$3n^2 + 8n$$

Chapter 6 - Linear Equations & Inequalities

1. Solve each of the following, you need to show your work to get ANY marks

a) $j + 7 = 12$

$$\begin{array}{r} -7 \quad -7 \\ j = 5 \end{array}$$

b) $k - 4 = 7$

$$\begin{array}{r} +4 \quad +4 \\ k = 11 \end{array}$$

c) $5t = 30$

$$\begin{array}{r} \frac{5}{5} \quad \frac{30}{5} \\ t = 6 \end{array}$$

d) $\frac{g}{3} = 6$

$$\begin{array}{r} \frac{g}{3} \times 3 = 6 \times 3 \\ g = 18 \end{array}$$

2. Solve each of the following, you need to show your work to get full marks

a) $4x - 2 = 6$

$$\begin{array}{r} +2 \quad +2 \\ 4x = 8 \end{array}$$

$$\begin{array}{r} \frac{4x}{4} = \frac{8}{4} \\ x = 2 \end{array}$$

c) $5(6h - 4) = 310$

$$\begin{array}{r} 30h - 20 = 310 \\ +20 \quad +20 \end{array}$$

$$\begin{array}{r} 30h = 330 \\ \frac{30h}{30} = \frac{330}{30} \end{array}$$

$$h = 11$$

b) $2 + 6m = -34$

$$\begin{array}{r} -2 \quad -2 \\ 6m = -36 \end{array}$$

$$\begin{array}{r} \frac{6m}{6} = \frac{-36}{6} \\ m = -6 \end{array}$$

d) $9 - 2f = f - 6$

$$\begin{array}{r} +6 \quad +6 \\ 15 - 2f = f \end{array}$$

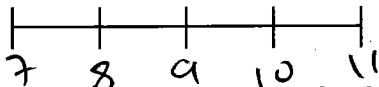
$$\begin{array}{r} 15 - 2f = f \\ +2f \quad +2f \\ 15 = 3f \end{array}$$

$$\begin{array}{r} \frac{15}{3} = \frac{3f}{3} \\ f = 5 \end{array}$$

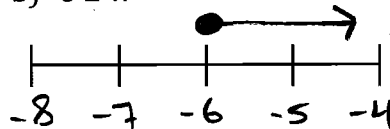
$$f = 5$$

3. Graph each inequality:

a) $g > 4$



b) $-6 \leq w$



4. Find the error made in the following:

$$3x + 5 = 18$$

$$\frac{3x}{3} + 5 = \frac{18}{3}$$

$$x + 5 = 6$$

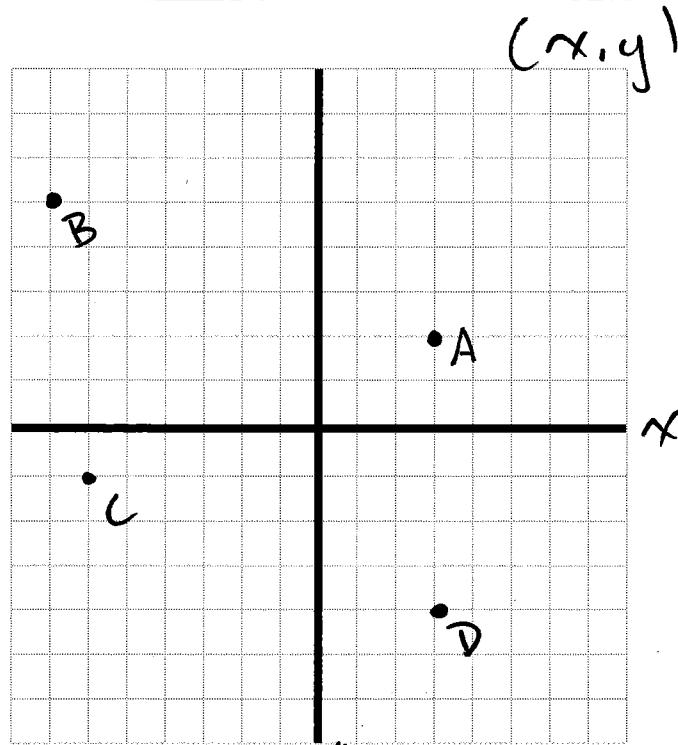
$$x + 5 - 5 = 6 - 5$$

$$x = 1$$

Chapter 4 – Linear Relations

1. Plot the following coordinate, ensure you label each one

A (3,2)	B (-7,5)
C (-6,-1)	D (3,-4)



2. Complete the tables below. Show at least one sample calculation when subbing for both y AND x

		$y = 2x - 2$		
x	y	Reorder →	x	y
3	4		-2	-6
1	0		-1	-4
-1	-4		1	0
-2	-6		3	4

Show sample equations here:

$$4 = 2x - 2$$

$$+2 \quad +2$$

$$\frac{6}{2} = \frac{2x}{2}$$

$$x = 3$$

$$y = 2(1) - 2$$

$$= 2 - 2$$

$$= 0$$

$$-4 = 2x - 2$$

$$+2 \quad +2$$

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

$$x = -1$$

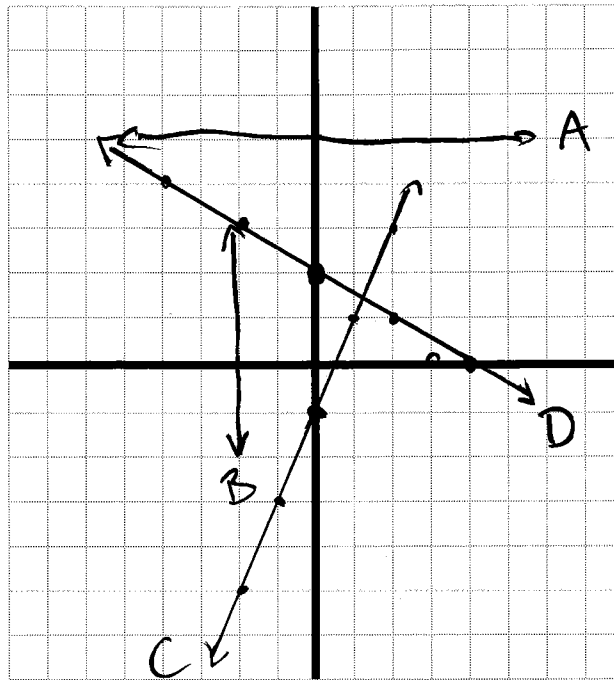
$$y = 2(-2) - 2$$

$$= -4 - 2$$

$$= -6$$

3. Graph the following; be sure to label each line clearly.

A $y = 5$	B $x = -2$
C $y = 2x - 1$	D $y = -\frac{1}{2}x + 2$

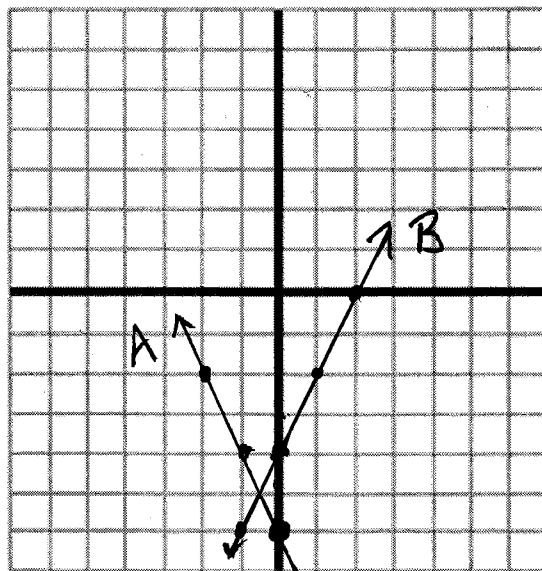


4. Convert the following equations into slope-intercept form ($y=mx+b$) and then graph, clearly label each graph.

a) $2x + y = -6$

$-2x \quad -2x$

$y = -2x - 6$



b) $4x - 2y = 8$

$-4x \quad -4x$

$\frac{-2y}{-2} = \frac{-4x + 8}{-2}$

$y = 2x - 4$