

REVIEW FOR MATHEMATICS COMPETENCY EXAM**ALGEBRA**

Operations with positive and negative numbers:

1. $2 - (-8)$
2. $(-3) + (2) + (-1)$
3. $(-2)(-1)(-3)$
4. $\frac{(-7)(0)}{-1}$
5. $8 - (-2 + 4)$
6. $4(-1/2)(-1)(3)$

Absolute value and algebraic evaluations:

1. $|-2|$
2. $|5|$
3. $|4 - 7|$
4. $|-5 + 2|$
5. $-|3 - 4|$

6. If $X = 3$ and $Y = -2$, what is the value of $2X - 3Y$?
7. If $A = 2$, then $A^2 + 4 = ?$
8. If $X = 1$ and $Y = 2$, what is the value of X^3Y ?
9. If $X = 10$ and $Y = 5$, what is $\frac{3X}{Y}$?
10. Find Y^2 if $Y = -3$.
11. Find X^2Y if $X = -1$ and $Y = 1$.

Addition/Subtraction:

1. $(3X^2 + 5X - 6) + (X^2 - 6X - 4)$
2. $12A - 5B - 2A + 3B$
3. $(5X^2 + X - 6) - (X^2 - 2X + 3)$
4. $(3A - 4B) - (2A + 5B)$
5. $14X - 2Y + 3X - 5Y$

Multiplication/division:

1. $3(X + 2)$

Perform the
indicated operation:

2. $2X - 4(3 - X)$

3. $(X + 3)(X - 7)$

4. $(2XY^2)^3$

5. $\frac{X^6}{Y^3} \cdot \frac{4Y}{X^3}$

6. $3^2 + 3^0$

7. $(-2X^3)(-X^2)(2X)$

8. $\frac{4X^2 + 8X^3}{2X}$

9. $\frac{X^3}{Y} \div \frac{X}{Y^2}$

10. $\frac{10X^3 + 10X^2 + 8X}{2X}$

11. $\frac{X - 2X^2 - X^5}{X}$

Equations:

1. Solve for X: $2X - 2 = -3X + 3$

2. If $AX + 5 = 8$, then $X = ?$

3. Solve for X: $6X - 3(X + 1) = 0$

4. Solve for Y: $7(5Y - 1) = 6(6Y + 2)$

5. If $6X + 5 - 7X = 10 - 4X + 3$, then $X = ?$

6. Solve for X: $BX - C = D$

Inequalities:

1. Solve for X: $3X + 5 > 12$

2. Solve for X: $-3X + 7 \geq -2$

3. Solve for Y: $5 - 3Y < -4$

4. Solve for P: $15P - 21 > 8P + 7$

5. Solve for Y: $4Y - 6 > 5Y - 7$

Exponents/radicals:

1. $\sqrt{(4X^4)}$

- Simplify:
2. $\sqrt[3]{(-8)}$
 3. $\sqrt[3]{(-1/8)}$
 4. $4^2 + 4^0$
 5. $\sqrt[3]{(-27X^6)}$

- Factoring:
- Factor:
1. $X^2 - 49$
 2. $X^2 - 3X - 10$
 3. $X^3Y + XY^3$
 4. $2X^2 - 5X + 3$
 5. $X^4Y - XY^2$

ARITHMETIC

1. Add:
 - a. $18 + 3804 + 162$
2. Subtract:
 - a. $1300 - 497$
3. Multiply:
 - a. 920×100
4. Divide:
 - a. $6 \overline{)1218}$
5. Add:
 - a. $.6 + 18 + .003 + 1.26$
6. Subtract:
 - a. $39 - 8.6$
7. Multiply:
 - a.
$$\begin{array}{r} 1.3 \\ \times .3 \\ \hline \end{array}$$
8. Divide:
 - a. $.8 \overline{)1.28}$
 - b. $100 \overline{)4.73}$
9. Add and simplify:
 - a. $\frac{5}{8} + \frac{1}{8}$
 - b. $\frac{1}{4} + \frac{2}{3}$
 - c. $2\frac{1}{6} + \frac{3}{8}$
10. Subtract and simplify:
 - a. $4\frac{1}{2} - 2\frac{3}{4}$
 - b. $18 - 11\frac{2}{5}$
11. Multiply and simplify:
 - a. $\frac{3}{4} \times \frac{20}{21}$
 - b. $2\frac{1}{2} \times 4\frac{2}{3}$
12. Divide and simplify:
 - a. $\frac{4}{11} \div \frac{8}{3}$
 - b. $8\frac{1}{4} \div 3$

7. 8

8. 2

9. 6

10. 9

11. 1

Addition/subtraction:

1. $4X^2 - X - 10$

2. $10A - 2B$

3. $4X^2 + 3X - 9$

4. $A - 9B$

5. $17X - 7Y$

Multiplication/division:

1. $3X + 6$

2. $6X - 12$

3. $X^2 - 4X - 21$

4. $8X^3Y^6$

5. $\frac{4X^3}{Y^2}$

6. 10

7. $4X^6$

8. $2X + 4X^2$

9. X^2Y

10. $5X^2 + 5X + 4$

11. $1 - 2X - X^4$

Equations:

1. $X = 1$

2. $X = 3/A$

3. $X = 1$

4. $Y = -19$

5. $X = 8/3$

6. $X = \frac{D+C}{B}$

Inequalities:

1. $X > 7/3$

2. $X \leq 3$

3. $Y > 3$

4. $P > 4$

5. $Y < 1$

Exponents/radicals:

1. $2X^2$

2. -2

3. -1/2

4. 17

5. $-3X^2$

Factoring:

1. $(X + 7)(X - 7)$

2. $(X - 5)(X + 2)$

3. $XY(X^2 + Y^2)$

4. $(2X - 3)(X - 1)$

5. $XY(X^3 - Y)$

