

MATH011 Review for Final:

I. Sign Operations:

- a. $-10 + 6$
- b. $-20 - 30$
- c. $8 - (-6)$
- d. $-2 - (-3)$
- e. $3 - 10$

II. Order of Operations

- a. $2 + (5 - 6 \times 2^3)$
- b. $-8 - 6 \div 2 + (-5) - (-10)^3 + \sqrt{25}$
- c. $10 - 4[6 - (-7)]$

III. Decimal Operations

- a. $100 - 0.89 + 2.1$
- b. $3.2 \times 2.1 \div 1.6 - 2$

IV. Fraction Operations

- a. $\frac{5}{8} - \frac{7}{10}$
- b. $-\frac{2}{3} + \frac{4}{5}$
- c. $2\frac{2}{5} \times 1\frac{1}{2}$
- d. $\frac{3}{4} \div \frac{1}{6}$
- e. $23\frac{1}{3} - 10\frac{7}{12}$
- f. $\frac{4}{5} \div 2\frac{2}{3} \times \left(\frac{2}{3}\right)^2$

V. Round off a number to any places.

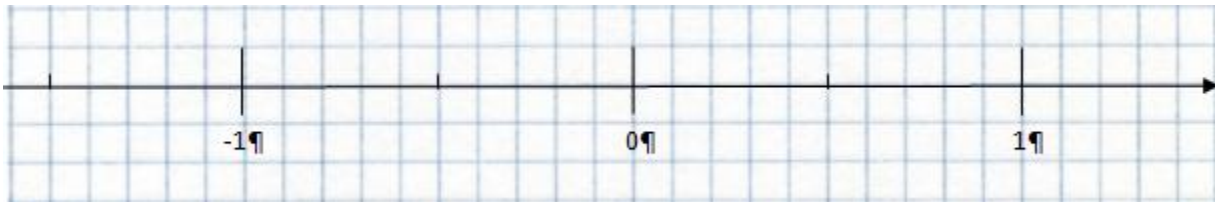
- a. Round 12345 to the nearest hundred.
- b. Round 9876543210 to the nearest million.
- c. Round 12.789 to the nearest tenth.

VI. Convert Fraction to Decimal or Percent, vice versa.

- a. Convert $\frac{3}{16}$ to a percent
- b. Convert 45.2% to a decimal

VII. Locate the following numbers on the number line:

$1\frac{1}{2}$ 0.75 -1.3 $-1\frac{1}{4}$ -0.45 25%



VIII. Given variable values, evaluate expression values

- a. Evaluate $x^3 - y^2 + 3y - x^0$ when $x = -2$, $y = -3$
b. Evaluate $b - \sqrt{b^2 - 4ac}$ when $a = 1$, $b = -4$, and $c = 3$.

IX. Simply expressions

a. Combine like terms & Distribute a factor

- | | |
|---------------------------|--|
| 1. $7 - x - 10$ | 5. $(5y^2 - 8y - 6) - (7y^2 - 4y + 2)$ |
| 2. $-9 + 6x + 12 - 13x$ | 6. $8x - 4(x - 2) - (x + 2)$ |
| 3. $-3(x + 9) - (7x - 2)$ | 7. $5x^2 + x^2$ |
| 4. $-5(a - 4) - (3a + 8)$ | 8. $(6x^2 - 5x + 3) - x(3x - 2)$ |

b. FOIL (Find Product)

- | | |
|------------------------------|-------------------------|
| 1. $(5x + 7)(2x - 3)$ | 4. $(x - 3)(x - 9)$ |
| 2. $(2x^2 - 5x)(3x + 7)$ | 5. $2b^3(b^2 - 4b + 3)$ |
| 3. $(3x^2 + 2x - 4)(5x + 2)$ | 6. $(x - 2)^2$ |

c. Exponent Operations

- | | |
|-------------------------------------|---|
| 1. -2^2 | 5. $\left(\frac{p^2q^3}{pq^2}\right)^6$ |
| 2. $(-4)^2$ | 6. $\frac{12x^6}{2x^2}$ |
| 3. 99^0 | 7. $-2(5 - 3) - 5(7 - 3) + 2\sqrt{9}$ |
| 4. $x^2x^3 + 2x^5 + (x^2)^3 + 3x^6$ | |

X. Factor expressions

a. Move out a common factor

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|---------------------------|---------------------|
| i. $14p^4q - 28p^2q^2$ | iii. $5x^3 - 15x^2$ |
| ii. $10a^2b^3 + 25a^3b^5$ | iv. $6x^2 - 3x$ |

b. Factor by grouping

- | | |
|------------------------|---------------------------|
| i. $9p - 9q + mp - mq$ | ii. $2ax + 2bx - 3a - 3b$ |
|------------------------|---------------------------|

c. Trinomial factoring (Trial and Errors)

- | | |
|-----------------------|---------------------|
| i. $a^2 - 10a + 24$ | iv. $5x^2 + 3x - 2$ |
| ii. $a^2 - 10a - 24$ | v. $5x^2 + 11x + 2$ |
| iii. $a^2 + 11a + 24$ | vi. $5x^2 + 9x - 2$ |

XI. Solve linear equations

- | | |
|-------------------------------|---------------------------------|
| 1. $9 + 7x = 5x - 1$ | 4. $7y - 5y + 15 = y + 8$ |
| 2. $2x - 2 + 3x = 8 - 6x + 1$ | 5. $2(x + 3) = (x + 1)$ |
| 3. $2(4x + 3) = 2 - 4(x - 4)$ | 6. $-2(4x + 9) - 4(x - 1) = -2$ |