

Grade 9 Pre-AP Math

Unit 1 Quiz – How well do you UNDERSTAND Algebra?

Victim:

Mr. Solutions

Very well done Mr. S.!!

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Terminology (10 marks, 1 mark each)

1. Match each term in the left column with the **best** definition or description in the right column.

- | | |
|--|--|
| ☒ <u>F</u> Expression | ☒ <u>A</u> Terms that contain exactly the same variable part. |
| ☒ <u>E</u> Simplify | ☒ <u>B</u> A polynomial with exactly three terms. |
| ☒ <u>H</u> Polynomial | ☒ <u>C</u> A symbol, usually a letter, which represents an unknown or unspecified value. |
| ☒ <u>J</u> Equation | ☒ <u>D</u> $-213ab^2$ |
| ☒ <u>A</u> Like Terms | ☒ <u>E</u> Write a mathematical expression in a simpler form. |
| ☒ <u>G</u> Factor | ☒ <u>F</u> Any mathematical calculation combining constants and/or variables using any valid mathematical operations. |
| ☒ <u>D</u> Degree-3 Term | ☒ <u>G</u> A number that can be exactly divided into another. |
| ☒ <u>B</u> Trinomial | ☒ <u>H</u> An algebraic expression in which each term consists of constants and/or variables combined using only multiplication (including powers). |
| ☒ <u>C</u> Variable | ☒ <u>I</u> 5^3 |
| ☒ <u>I</u> Degree-0 Term | ☒ <u>J</u> A mathematical statement asserting that two expressions are equal. |

Modified True/False (5 marks, 0.5 marks for each blank)

Indicate whether each statement is **true** or **false**. If false, **change** the **underlined part** to make the statement true.

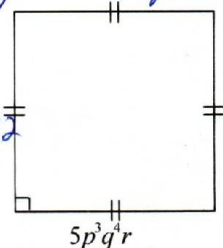
2. T/F False $2^4(3^{-4}) = 6^{-4+4} = 6^0$ $\frac{16}{1}(\frac{1}{81}) = \frac{16}{1(81)} = \frac{16}{81}$ Change: $\frac{16}{81}$ ✓
3. T/F False The expression " $-c^6$ " means " $(-c)(-c)(-c)(-c)(-c)(-c)$." Change: $-c(c)(c)(c)(c)(c)$ ✓
4. T/F False The expression " $6 - x$ " means "a number reduced by 6." Change: 6 reduced by a number ✓
5. T/F False The expression " $2x^2 + 3x^2$ " **simplifies to** " $6x^4$." Change: $5x^2$ ✓
6. T/F False The expression " $2x^2(3x^2)$ " **simplifies to** " $5x^2$." Change: $6x^4$ ✓

Multiple Choice (2 marks)

Identify the choice that best completes the statement or answers the question. Use the provided blank space to write the letter corresponding to your choice.

7. d Which expression represents the area of the square shown at the right?
 (a) $20p^3q^4r$ (b) $20p^6q^8r^2$ (c) $10p^6q^8r^2$ (d) $25p^6q^8r^2$
8. C The expression $-2(-3c^7d^{-4})^3$ simplifies to ...
 (a) $6c^{10}d^{-1}$ (b) $216c^{21}d^{-12}$ (c) $54c^{21}d^{-12}$ (d) $54c^{10}d^{-1}$

$$(5p^3q^4r)^2 = 25p^6q^8r^2$$



$$-2(-3)^3(c^7)^3(d^{-4})^3 = 54c^{21}d^{-12}$$

Full Solutions

9. Evaluate. (8 marks)

$$\begin{aligned} \text{(a)} \quad & -5(4^2 - 12^2) - 5(4 - 12)^2 \\ & = -5(16 - 144) - 5(-8)^2 \\ & = -5(-128) - 5(64) \\ & = 640 - 320 \\ & = 320 \end{aligned}$$

$$\begin{aligned} \text{(b)} \quad & -3a^{-2}b^2 - 5a(a-b)^2, \text{ if } a=3 \text{ and } b=-2 \\ & = -3(3)^{-2}(-2)^2 - 5(3)(3 - (-2))^2 \\ & = -\frac{3}{1}(\frac{1}{3^2})(\frac{4}{1}) - 15(5)^2 \\ & = -\frac{12}{9} - 15(25) \\ & = -\frac{4}{3} - 375 = -\frac{4}{3} - \frac{1125}{3} = -\frac{1129}{3} \end{aligned}$$

10. Simplify. (30 marks)

$$\begin{aligned} \text{(a)} \quad & -3x^2y - 5xy^2 + 2x^2y - 7xy^2 \\ & = -3x^2y + 2x^2y - 5xy^2 - 7xy^2 \\ & = -x^2y - 12xy^2 \\ \text{(b)} \quad & -3x^2y(-5xy^2)(+2x^2y)(-7xy^2) \\ & = -3(-5)(2)(-7)x^2x^2x^2xy^2y^2y^2 \\ & = -210x^6y^6 \\ \text{(c)} \quad & -3x^2y - 5xy^2(+2x^2y - 7xy^2) \\ & = -3x^2y - 10x^3y^3 + 35x^2y^4 \end{aligned}$$

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$$\begin{aligned} \text{(d)} \quad & -(-7s^2 + 11s) - (9s^2 - 2s) \\ & = + (7s^2 - 11s) + (-9s^2 + 2s) \\ & = 7s^2 - 11s - 9s^2 + 2s \\ & = -2s^2 - 9s \\ \text{(e)} \quad & -3(2d^2 - 8d - 5) - 3d(d^2 - 8d - 2) \\ & = -6d^2 + 24d + 15 - 3d^3 + 24d^2 + 6d + 15 \\ & = -3d^3 + 18d^2 + 30d + 15 \\ \text{(f)} \quad & \frac{32b^9d^2(-bd^4)}{2^3(2b^3d)^2} \\ & = \frac{32(-1)b^9bd^2d^4}{8(2^2)(b^3)^2d^2} \\ & = \frac{-32b^{10}d^6}{8(4)b^6d^2} \\ & = (-\frac{32}{32})(\frac{b^{10}}{b^6})(\frac{d^6}{d^2}) \\ & = -b^4d^4 \end{aligned}$$

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$$\begin{aligned} \text{(g)} \quad & (2y^{-3})^{-4} + 2^{-3}y^6(-3y^6) \\ & = 2^{-4}y^{12} + 2^{-3}(-3)y^6y^6 \\ & = \frac{1}{2^4}y^{12} + \frac{1}{2^3}(-\frac{3}{1})y^{12} \\ & = \frac{1}{16}y^{12} + (-\frac{3}{8})y^{12} \\ & = \frac{1}{16}y^{12} - \frac{6}{16}y^{12} = -\frac{5}{16}y^{12} \\ \text{(h)} \quad & \left(\frac{2a^2}{3a^{-4}b^{-1}}\right)^{-3} = \frac{2^{-3}(a^2)^{-3}}{3^{-3}(a^{-4})^{-3}(b^{-1})^{-3}} \\ & = \frac{\frac{1}{2^3}a^{-6}}{\frac{1}{3^3}a^{12}b^3} \\ & = (\frac{1}{8} \div \frac{1}{27}) \left(\frac{a^{-6}}{a^{12}}\right) \left(\frac{1}{b^3}\right) \\ & = \frac{27}{8}a^{-18} \left(\frac{1}{b^3}\right) = \frac{27}{8}(a^{-18})(\frac{1}{b^3}) \\ & = \frac{27}{8a^{18}b^3} \end{aligned}$$

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