MPM 1D9

Grade 9 Pre-AP Math
Unit 1 – Practice Test

***Victim*: _____**

KU	APP	TIPS	COM
/30	/17	/12	/22

Terminology (12 COM)

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

_____	Binomial	**A.** To raise a power to an exponent, keep the base and multiply the exponents.
_____	Polynomial	**B.** Write a mathematical expression in a simpler form.
_____	Simplify	**C.** A symbol, usually a letter, which represents an unknown or unspecified value.
_____	Equation	**D.** The sum of the exponents on the variables in a term.
_____	Like Terms	**E.** A polynomial with exactly two terms.
_____	Distributive Law	**F.** Any mathematical calculation combining constants and/or variables using any valid mathematical operations.
_____	$(a^x)^y = a^{xy}$	**G.** Terms that contain exactly the same variable part, that is, exactly the same literal coefficient.
_____	Pythagorean Theorem	**H.** An algebraic expression in which each term consists of constants and/or variables combined using only multiplication (including powers).
_____	Degree of a Term	**I.** $a(x+y) = ax + ay$
_____	Term	**J.** Any mathematical calculation combining constants and/or variables using any operations except for addition and subtraction.
_____	Variable	**K.** A mathematical statement asserting that two expressions are equal.
_____	Expression	**L.** $c^2 = a^2 + b^2$

Modified True/False (3 KU)

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

2. T/F _____ The expression "$\underline{x - 6}$" means "six reduced by a number." **Change:** _____

3. T/F _____ The expression "$\underline{2 + x + 5}$" means "double a number increased by 5." **Change:** _____

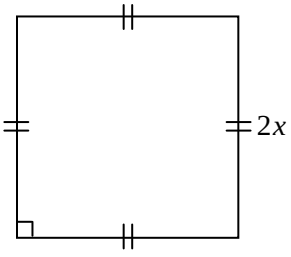
4. T/F _____ The expression "$4n - 7$" means "the <u>quotient</u> of 4 and a number, decreased by 7." **Change:** _____

Multiple Choice (3 KU)

Identify the choice that best completes the statement or answers the question.

5. Which expression represents the area of the square shown at the right?

(a) $4x^2$ **(b)** $8x^2$ **(c)** $8x$ **(d)** $2x^2$



6. In which pair are the expressions equivalent?

(a) $5m^2$ and $(5m)^2$ **(b)** $(yz)^4$ and y^4z^4 **(c)** $2(c^7)^3$ and $2c^{10}$ **(d)** $-3a^2$ and $(-3a)^2$

7. If $a = -2$ and $c = 5$, what is the value of the expression $\frac{a+c}{a^2-c^2}$?

(a) $\frac{1}{3}$ **(b)** $\frac{3}{29}$ **(c)** $-\frac{3}{29}$ **(d)** $-\frac{1}{7}$

KU	APP	TIPS	COM
–	–	–	–

***Full Solutions* (10 COM)**

8. Evaluate. **(8 KU)**

(a) $-3\left(5^2-4^2\right)-6\left(6^2-5^2\right)$

(b) $2t^2-3st^3+\left(3st\right)^3$, if $t=\frac{1}{2}$ and $s=2$

9. Simplify. **(16 KU)**

(a) $\left(x^2-5x\right)-\left(3x^2-7x\right)$

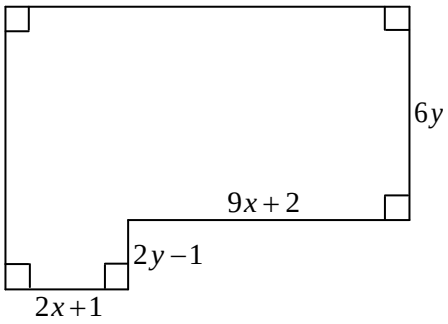
(b) $\left(x^2-5x\right)\left(3x^2-7x\right)$

(c) $\frac{\left(t^2\right)^3\left(2t^3\right)^4}{\left(4t\right)^3}$

(d) $2y\left(y^2-4y\right)-3y\left(5y^2-7y\right)$

10. Write an algebraic expression, in ***simplest form***, for …

(a) …the ***perimeter*** of the figure at the right. **(4 APP)**

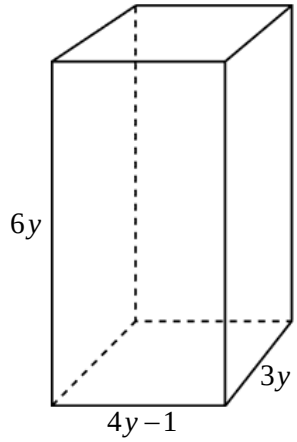


(b) …the ***area*** of the figure at the right. **(4 APP)**

KU	APP	TIPS	COM
–	–	–	–

11. Create an area model that demonstrates why $(2x+1)(3x+2)=6x^2+7x+2$ **(5 APP)**

12. Write an algebraic expression, in ***simplest form***, for the ***volume*** of the prism shown at the right. (Note that for a prism, $V = l \times w \times h$.) **(4 APP)**



13. Two friends, Elliot and Dang, are travelling to the airport in two different taxis. The taxi company used by Elliot charges a $5.00 flat fee plus $0.50 for every kilometre. In Dang's case, the taxi company charges a $3.00 flat fee plus $0.70 for every kilometre. **(6 TIPS)**

(a) Write two expressions, one that represents Elliot's cost of travelling by taxi and another that represents Dang's cost of travelling by taxi.

Elliot: Dang:

(b) Write an expression that represents Dang's and Elliot's ***total cost*** of travelling by taxi.

(c) If Elliot travelled 35 km and Dang travelled 75 km, how much money did each friend spend?

KU	APP	TIPS	COM
–	–	–	–

14. The table below summarizes the results of an experiment studying bacterial growth. At the beginning of the experiment, there are ten bacteria in a dish. Every 12 hours, the number of bacteria doubles. **(6 TIPS)**

(a) Extend the values in the table for the next two days.

Time Elapsed (h)	***Number of Bacteria***
0	10
12	$10 \times 2 = 20$
24	$(10 \times 2) \times 2 = 10 \times 2^2$ $= 40$
36	$(10 \times 2^2) \times 2 = 10 \times 2^3$ $= 80$
48	$(10 \times 2^3) \times 2 = 10 \times 2^4$ $= 160$

(b) Assuming that the growth rate remains constant, use the pattern in the table to calculate the number of bacteria you would expect to find after 7 days.

(c) Write an equation that relates the number of bacteria to the amount of time elapsed (in days).

KU	APP	TIPS	COM
–	–	–	–