

ORDER OF OPERATIONS, ALGEBRA AND "MEANING" PRACTICE QUIZ

/69

Victim: Mr. Solutions

1. Separate each of the following expressions into **terms**. Then **evaluate**. (Show all steps!) 20/20

(a) $-4^2 + (-4)^2 - 5(5 - 7(6)) + 5(-2)^5$

$$= -16 + 16 - 5(5 - 42) + 5(-32)$$

$$= 0 - 5(-37) + (-160)$$

$$= 0 - (-185) - 160$$

$$= 0 + 185 - 160$$

$$= 25$$

(b) $1 - 9^2 + 5(-3)(-2)^5 + (-9)^2 - 5[1 - 2(6^2)]$

$$= 1 - 81 + 5(-3)(-32) + 81 - 5[1 - 2(36)]$$

$$= -80 + 480 + 81 - 5(1 - 72)$$

$$= 481 - 5(-71)$$

$$= 481 - (-355)$$

$$= 481 + 355 = 836$$

(c) $\frac{-2[14 - 3(-7)^2] - (-16)}{-6^2 + 3(-7)(-8) - 4(3 - 7)}$

$$= \frac{-2[14 - 3(49)] + 16}{-36 + 168 - 4(-4)}$$

$$= \frac{-2(14 - 147) + 16}{132 - (-16)}$$

$$= \frac{-2(-133) + 16}{132 + 16}$$

$$= \frac{266 + 16}{148}$$

$$= \frac{282 \div 2}{148 \div 2} = \frac{141}{74}$$

(d) $\frac{-(-4) - 2[-11 - 3(-7)^3]}{-7^2 - 4(-3 - 7) + 3(7)(-8)}$

$$= \frac{4 - 2[-11 - 3(-343)]}{-49 - 4(-10) + (-168)}$$

$$= \frac{4 - 2[-11 - (-1029)]}{-49 - (-40) - 168}$$

$$= \frac{4 - 2(-11 + 1029)}{-49 + 40 - 168}$$

$$= \frac{4 - 2(1018)}{-177}$$

$$= \frac{4 - 2036}{-177} = \frac{-2032}{-177} = \frac{2032}{177}$$

2. **Interpret** each of the following in terms of **gains** and **losses**. Then **simplify**. (Show all steps!) /24

Expression	Interpretation in Terms of Gains and Losses	Simplified Form of Expression	Answer
(a) $-x - (-3x)$	A loss of 1 "x" followed by a gain of 3 "x's"	$-x + 3x$	$2x$
(b) $-6a + (+12a)$	A loss of 6 "a's" followed by a gain of 12 "a's"	$-6a + 12a$	$6a$
(c) $-1y + (-46y)$	A loss of 1 "y" followed by a loss of 46 "y's"	$-y - 46y$	$-47y$
(d) $+18st^2 - (+41st^2)$	A gain of 18 "st ² 's" followed by a loss of 41 "st ² 's"	$18st^2 - 41st^2$	$-23st^2$
(e) $48a^2b^3 - (-31a^2b^3)$	A gain of 48 "a ² b ³ 's" followed by a gain of 31 "a ² b ³ 's"	$48a^2b^3 + 31a^2b^3$	$79a^2b^3$
(f) $-38xyz - 30xyz$	A loss of 38 "xyz's" followed by a loss of 30 "xyz's"	$-68xyz$	$-68xyz$
(g) $-38xyz - 30xyz^2$	A loss of 38 "xyz's" followed by a loss of 30 "xyz ² 's"	$-38xyz - 30xyz^2$	

3. Interpret each expression in terms of groups. Then represent the expression with a diagram and evaluate.

8/8

Factored Expression	Interpretation in Terms of Groups	Diagram	Expanded Expression
(a) $3(4x+2)$	Three groups of $4x+2$		$12x+6$
(b) $3(x+y)$	Three groups of $x+y$		$3x+3y$
(c) $-3(x+y)$	-3 groups of $x+y$ ✓		$-3x-3y$ ✓
(d) $-2(2x-3y)$	-2 groups of $2x-3y$ ✓		$-4x+6y$ ✓

4. Simplify each expression fully. 17/17

(a) $(-3ab-5c)+(ab-c)$
 $= -3ab-5c+ab-c$ ✓
 $= -3ab+ab-5c-c$ ✓
 $= -2ab-6c$ ✓

(b) $(-3ab-5c)-(ab-c)$ *add the opposite*
 $= -3ab-5c+(-ab+c)$ ✓
 $= -3ab-5c-ab+c$ ✓
 $= -3ab-ab-5c+c$ ✓
 $= -4ab-4c$ ✓

(c) $-(3ab-5c)+6(ab-c)$
 $= +(-3ab+5c)+6ab-6c$ ✓
 $= -3ab+5c+6ab-6c$ ✓
 $= -3ab+6ab+5c-6c$ ✓
 $= 3ab-c$ ✓

(d) $-(3ab-5c)-6(ab-c)$
 $= +(-3ab+5c)-6ab+6c$ ✓
 $= -3ab+5c-6ab+6c$ ✓
 $= -3ab-6ab+5c+6c$ ✓
 $= -9ab+11c$ ✓