Section 2.3 Order of Operations

When subtracting remember to "Add the Opposite"

Review the basics

Adding Integers	Subtracting Integers
(+5) + (+2) = +7	(+7) - (+3) = (+4)
(-6) + (-4) = -10	(-6) - (-3) = (-6) + (+3) = -3
(-8) + (+2) = -6	(-2) - (+9) = (-2) + (-9) = -11
(+9) + (-3) = +6	(+3) - (-6) = (+3) + (+6) = +9

Multiplying Integers	Dividing Integers
(+2)(+3) = +6	(+10) ÷ (+2) = +5
(-4)(-5) = +20	(-45) ÷ (-5) = +9
(+3)(-5) = -15	(-121) ÷ (+11) = -11
(-2)(+7) = -14	(+64) ÷ (-8) = -8

Same Signs	(+)(+) = (+)
Positive	(-)(-) = (+)
Or	
Opposite Signs	(+)(-) = (-)
Negative	(-)(+) = (-)

Order of Operations

B/P do operations inside brackets/parenthesis first

E exponents

D, M multiply or divide, in order, from left to right, whichever comes first

A, S add or subtract, in order, from left to right, whichever comes first

Examples

A) $2^3 + 1$
$(2)(2)(2) + 1$
$8 + 1$
9

B) $8 - 3^2$
$8 - (3)(3)$
$8 - 9$
-1

C) $(3 - 1)^3$
$(2)^3$
$(2)(2)(2)$
8

D) $[2 \times (-2)^3]^2$
$[2 \times (-2)(-2)(-2)]^2$
$[2 \times (-8)]^2$
$[-16]^2$
$[-16][-16]$
256

E) $(7^2 + 5^0) \div (-5)^1$

$[(7)(7) + 1] \div (-5)^1$

$[49 + 1] \div (-5)^1$

$50 \div -5$

-10

F) This student got the correct answer, but did not earn full marks. Find and explain the mistake the student made.

$-(24 - 3 \times 4^2)^0 \div (-2)^3$

$-(24 - 12^2)^0 \div (-8)$

$-(24 - 144)^0 \div (-8)$

$-(-120)^0 \div (-8)$

$-1 \div (-8)$

$$\frac{1}{8}$$

$-(24 - 3 \times 4^2)^0 \div (-2)^3$
$-(24 - 12^2)^0 \div (-8)$
$-(24 - 144)^0 \div (-8)$
$-(-120)^0 \div (-8)$
$-1 \div (-8)$
$\frac{1}{8}$

The mistake occurred at 4^2.
$4^2 = 16$ should have been done BEFORE 3 x 4

OR
the student could have realized that the entire bracket has the exponent zero, so it's 1.

Correct Methods

$-(24 - 3 \times 4^2)^0 \div (-2)^3$
$-(24 - 3 \times 16)^0 \div (-8)$
$-(24 - 48)^0 \div (-8)$
$-(-24)^0 \div (-8)$
$-1 \div (-8)$
$\frac{1}{8}$

OR

$-(24 - 3 \times 4^2)^0 \div (-2)^3$
$-(1) \div (-2)^3$
$-1 \div (-8)$
$\frac{1}{8}$

Complete
Pages 66 - 67
#'s 3, 4, 7, 8, 10, 11, 18