

PREALGEBRA/GRACEY  
INTEGER ARITHMETIC OPERATIONS  
SHOW ALL WORK FOR FULL CREDIT

SLO  
ASSESSMENT/46  
POINTS POSSIBLE

1. Perform the indicated operation. Each problem is worth 3 points.

a.  $410 - 258$

RUBRIC:

- 0 Left blank/did not use subtraction and did not perform incorrect operation correctly
- 1 Subtracted with no regrouping
- 2 Subtracting with regrouping with errors
- 3 Correct answer

0: 
$$\begin{array}{r} 410 \\ -258 \\ \hline 768 \end{array}$$

1: 
$$\begin{array}{r} 410 \\ -258 \\ \hline 248 \end{array}$$

2: 
$$\begin{array}{r} 3410 \\ -258 \\ \hline 162 \end{array}$$

3: 
$$\begin{array}{r} 3410 \\ -258 \\ \hline 152 \end{array}$$

b.  $-14 + 68$

RUBRIC:

- 0 Left blank/did not use correct operation and did not perform incorrect operation correctly
- 1 Correct sign and incorrect number value
- 2 Correct number value and incorrect sign
- 3 Correct answer

0: 
$$\begin{array}{r} 14 \\ +68 \\ \hline 72 \end{array}$$

1: 
$$\begin{array}{r} 68 \\ -14 \\ \hline 53 \end{array}$$

2: 
$$\begin{array}{r} 68 \\ -14 \\ \hline -54 \end{array}$$

3: 
$$\begin{array}{r} 68 \\ -14 \\ \hline 54 \end{array}$$

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c.  $612 \div (-3)$

RUBRIC:

- 0 Left blank/did not use correct operation and did not perform incorrect operation correctly
- 1 Correct sign and incorrect number value
- 2 Correct number value and incorrect sign
- 3 Correct answer

0:  $612 - 3 = 615$       1: 
$$\begin{array}{r} -24 \\ 3 \overline{)612} \end{array}$$
      2: 
$$\begin{array}{r} 204 \\ 3 \overline{)612} \end{array}$$
      3: 
$$\begin{array}{r} -204 \\ -3 \overline{)612} \end{array}$$

d.  $(-4)(-28)$

RUBRIC:

- 0 Left blank/did not use correct operation and did not perform incorrect operation correctly
- 1 Correct sign and incorrect number value
- 2 Correct number value and incorrect sign
- 3 Correct answer

0:  $(-4)(-28) = -428$       1: 
$$\begin{array}{r} 28 \\ \times 4 \\ \hline 110 \end{array}$$
      2: 
$$\begin{array}{r} {}^3 28 \\ \times 4 \\ \hline -112 \end{array}$$
      3: 
$$\begin{array}{r} {}^3 28 \\ \times 4 \\ \hline 112 \end{array}$$

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2. Perform the indicated operation(s). Each problem is worth 5 points.

a.  $(-16)(0) - 7(-5)$

RUBRIC:

- 0 Left blank/did not use correct operations and did not perform incorrect operation correctly
- 1 Correct operations which were not performed correctly
- 2 One correct operation and one incorrect operation
- 3 Two correct operations with wrong signs
- 4 Two correct operations with one wrong sign
- 5 Correct answer

0:  $-160 - 75 = 235$

4:  $0 - 35 = -35$

1:  $-16 - (-35) = -51$

5:  $0 - (-35) = 35$

2:  $0 - 35 = 35$

3:  $0 - (35) = 35$

b.  $-1 + 2 - 8 - |-7|$

RUBRIC:

- 0 Left blank/did not use correct operations and did not perform incorrect operation correctly
- 1 One correct operation with incorrect absolute value and two other operations worked incorrectly
- 2 Two correct operations with incorrect absolute value and one other incorrect operation
- 3 Three correct operations with incorrect absolute value
- 4 Four correct operations with incorrect sign
- 5 Correct answer

0:  $3 - 87 = 90$

3:  $1 - 8 - (-7) = -7 + 7$   
 $= 0$

1:  $1 - 8 - (-7) = 1 - 15$   
 $= -14$

4:  $1 - 8 - (7) = 1 - 1$   
 $= 0$

2:  $1 - 8 - (-7) = 9 - 7$   
 $= 2$

5:  $1 - 8 - (7) = -7 - 7$   
 $= -14$

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SLO  
 ASSESSMENT/46  
 POINTS POSSIBLE

c.  $-(-4)^2 - 4^2 + (-2)^3$

RUBRIC:

- 0 Left blank/did not use correct operations and did not perform incorrect operation correctly
- 1 One correct addition/subtraction operations but no understanding of exponents shown
- 2 Correctly added/subtracted and some understanding of exponents shown
- 3 Correctly added/subtracted and performed two of three exponent operations successfully
- 4 Correct operations with one or more wrong signs
- 5 Correct answer

0:  $8 - 8 + 6 = 6$

1:  $-(-8) - 8 - 6 = -6$

2:  $-16 + 16 + 8 = 8$

3:  $-16 - 16 + 8 = -24$

4:  $16 - 16 - 8 = -8$

5:  $-16 - 16 - 8 = -40$

d.  $\frac{10(-1) - (-2)(-3)}{2[-8 \div (-2 - 2)]}$

RUBRIC:

- 0 Left blank/did not use correct operations and did not perform incorrect operation correctly
- 1 One or fewer correct results in numerator and denominator
- 2 Correct result in numerator with incorrect use of parenthesis in denominator
- 3 Correct result in denominator with incorrect results in numerator
- 4 Correct result in numerator and denominator with incorrect division and/or sign
- 5 Correct answer

0:  $\frac{60}{2(0)} = \bigcirc$

3:  $\frac{10 - 6}{2(-8 \div -4)} = \frac{4}{2(2)}$   
 $= 1$

5:  $\frac{-10 - 6}{2(-8 \div -4)} = \frac{-16}{2(2)}$   
 $= -4$

1:  $\frac{10 - 6}{2(0)} = ?$

4:  $\frac{-10 - 6}{2(-8 \div -4)} = \frac{-16}{2(-4)}$   
 $= 2$

2:  $\frac{-10 - 6}{-16 \div (4)} = \frac{-16}{-4}$   
 $= -4$

PAGE ONE: Involves only arithmetic operations

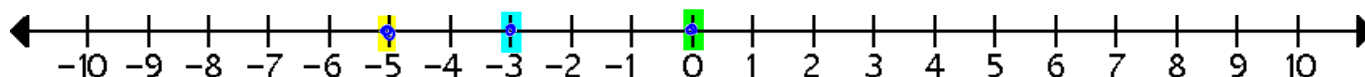
- 0 No understanding of concept
- 1 Little to no understanding of concept
- 2 Little understanding of concept
- 3 Moderate understanding of concept
- 4 Understanding concept with slight incorrect conceptions
- 5 Full understanding of concept

32 TOTAL POINTS

POINTS EARNED ON PAGE 1	RUBRIC SCORE
0-3	0
3-9	1
9-15	2
15-21	3
21-27	4
27-32	5

3. Consider the following integers: -5, -3, 0

a. (3 POINTS) Graph each integer in the list above on the number line below.



RUBRIC: One point awarded for each correctly plotted integer.

b. (3 POINTS) Insert  $<$  or  $>$  between each pair of integers to make the statement true.

- i.  $-3 > -5$   
 ii.  $-5 < 0$   
 iii.  $0 < -3$

RUBRIC: One point awarded for each correctly placed inequality. No points awarded for  $\leq$  or  $\geq$ .

4. (3 POINTS) Fill in the blanks.

- a. 5 is the opposite of -5.  
 b. A negative number is always less than a positive number.  
 When using an inequality symbol, the "arrow" points towards the smaller number.

RUBRIC: One point awarded for each correct term.

5. (5 POINTS) You received a \$20 iTunes gift card for your birthday. You want to purchase two albums for \$8 each and 5 songs for \$1 each. Determine if you can purchase all of the above with your iTunes gift card. Explain your reasoning.

- 0 Left blank/did not use correct operations and did not provide an explanation  
 1 One or more arithmetic errors with incorrect explanation  
 2 One or more arithmetic errors with explanation that somewhat corresponds to the student's answer  
 3 One or more arithmetic errors with explanation that correctly corresponds to the student's answer  
 4 Correct answer with explanation that does not completely correspond to the student's answer  
 5 Correct answer with explanation that correctly corresponds to the student's answer

0: yes

$$1: 20 - 8 + 5 = 23$$

yes since I have more on the card now.

$$2: 20 - 8 - 5 = 20 - 13 = 7$$

No, I'll be short \$7

$$3: 20 - 8 - 5 = 20 - 13 = 7$$

yes and I'll have \$7 left

$$4: 20 - 2(8) - 5(1) = 20 - 16 - 5 = -1$$

yes I'll need \$1.

$$5: 20 - 2(8) - 5(1) = 20 - 16 - 5 = -1$$

No, I'll be short by \$1.

PAGE TWO: Involves higher-level understanding of applications and concepts

OVERALL RUBRIC:

- 0 No understanding of concept
- 1 Little to no understanding of concept
- 2 Little understanding of concept
- 3 Moderate understanding of concept
- 4 Understanding concept with slight incorrect conceptions
- 5 Full understanding of concept

14 TOTAL POINTS

POINTS EARNED ON PAGE 2	RUBRIC SCORE
0-2	0
2-4	1
4-6	2
6-8	3
8-10	4
10-12	5

SCORE FOR STUDENT LEARNING OUTCOME

SUM OF RUBRIC SCORES FROM PAGES 1 AND 2	STUDENT LEARNING OUTCOME SCORE	MEANING
COMBINED SCORE $< 5$	0	No understanding of concept
$5 \leq$ COMBINED SCORE $< 6$	1	Little to no understanding of concept
$6 \leq$ COMBINED SCORE $< 7$	2	Little understanding of concept
$7 \leq$ COMBINED SCORE $< 8$	3	Moderate understanding of concept
$8 \leq$ COMBINED SCORE $< 9$	4	Understanding concept with slight incorrect conceptions
$9 \leq$ COMBINED SCORE $\leq 10$	5	Full understanding of concept