

## January Exam Review - Unit 2

### Multiple Choice

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

- \_\_\_\_\_ 1. Write the base of  $-(-6)^3$ .  
a. 6                      b. -6                      c.  $-6 \times 3$                       d. 3
- \_\_\_\_\_ 2. Evaluate:  $6^5$   
a. 30                      b. 7776                      c. 15 625                      d. 11
- \_\_\_\_\_ 3. Evaluate:  $-4^4$   
a. -256                      b. -16                      c. 16                      d. 256
- \_\_\_\_\_ 4. Evaluate:  $(-5)^7$   
a. -35                      b. 35                      c. 78 125                      d. -78 125
- \_\_\_\_\_ 5. Which answer is negative?  
i)  $(-7)^8$   
ii)  $-(7)^8$   
iii)  $-(-7)^8$   
a. i and ii                      b. i and iii                      c. ii and iii                      d. i only
- \_\_\_\_\_ 6. Which power is positive?  
i)  $(6)^5$   
ii)  $(-6)^5$   
iii)  $-(6)^5$   
iv)  $-(-6)^5$   
a. i and iv                      b. iii and iv                      c. i, ii, and iv                      d. i and ii
- \_\_\_\_\_ 7. Evaluate:  $-8^0$   
a. 1                      b. -1                      c. 0                      d. 8
- \_\_\_\_\_ 8. Evaluate:  $(-13)^0$   
a. 0                      b. 1                      c. -13                      d. -1
- \_\_\_\_\_ 9. Evaluate:  $(-10^3)^0$   
a. 1                      b. -1                      c. -30                      d. 30
- \_\_\_\_\_ 10. Evaluate:  $6^5 - 3^3$   
a. 6561                      b. 9                      c. 7749                      d. 21
- \_\_\_\_\_ 11. Evaluate:  $(5^3 - 4^2)^0 - (6^2 - 8^0)$   
a. -34                      b. -35                      c. -36                      d. 73
- \_\_\_\_\_ 12. Evaluate:  $(3+4)^2 - (2-4)^3$   
a. -31                      b. 57                      c. 20                      d. 41

- \_\_\_ 13. Which expression has a value of 0?  
 i)  $-(-5)^0 + 2 \times (-3)^0 - (-2)^0$   
 ii)  $(5 \times 3)^0 - (3 - 2)^2 + (4 - 3)^0$   
 iii)  $3 - (2 \div 2)^2 - (-4)^0$   
 iv)  $(4 \times 2 \div 4) - (3^2 - 5^2)^0 - (-5)^0$   
 a. i, ii, and iv      b. ii and iii      c. i, iii, and iv      d. i and iv
- \_\_\_ 14. Write the product of  $5^3 \times 5^4$  as a single power.  
 a.  $5^7$       b.  $5^{12}$       c.  $10^7$       d.  $25^7$
- \_\_\_ 15. Write the product of  $(-7)^7 \times (-7)^3$  as a single power.  
 a.  $(-7)^{10}$       b.  $(-14)^{10}$       c.  $49^{10}$       d.  $(-7)^{21}$
- \_\_\_ 16. Write the quotient of  $\frac{6^{10}}{6^5}$  as a single power.  
 a.  $6^5$       b.  $6^{15}$       c.  $6^2$       d. 2
- \_\_\_ 17. Write the quotient of  $(-8)^{15} \div (-8)^5$  as a single power.  
 a. 3      b.  $(-8)^{20}$       c.  $(-8)^3$       d.  $(-8)^{10}$
- \_\_\_ 18. Express  $\frac{(-5)^9 \times (-5)^6}{(-5)^3}$  as a single power.  
 a.  $(-5)^5$       b.  $(-5)^{51}$       c.  $(-5)^{12}$       d.  $(-5)^{18}$
- \_\_\_ 19. Evaluate:  $(-7)^6 \div (-7)^6$   
 a. 0      b. -7      c. 1      d. -1
- \_\_\_ 20. Evaluate:  $\frac{(5)^8 \times (5)^6}{(5)^{12}}$   
 a. 10      b. 4      c. 2      d. 25
- \_\_\_ 21. Evaluate:  $(-2)^5 \times (-2)^3 \div (-2)^0$   
 a. -128      b. -256      c. 256      d. -32 768
- \_\_\_ 22. Which expressions have positive values?  
 i)  $\left[(-5)^2\right]^7$   
 ii)  $\left[-(-5)^2\right]^7$   
 iii)  $-(5^2)^7$   
 iv)  $-[-(-5)^2]^7$   
 a. ii and iv      b. ii and iii      c. i and ii      d. i and iv

\_\_\_\_\_ 23. Which expressions have negative values?

i)  $\left[-(-3)^5\right]^5$

ii)  $\left(-3^5\right)^5$

iii)  $\left[(-3)^5\right]^5$

iv)  $-\left[(-3)^5\right]^5$

a. ii and iii

b. i and ii

c. i and iv

d. iii and iv

### Short Answer

24. Which answers are positive?

i)  $(5)^3$

ii)  $(-7)^6$

iii)  $(-3)^7$

iv)  $-(6)^3$

25. Evaluate:  $\frac{5^3 \times (2+4)^2 \times 6(-9)^0}{-(4)^0 \times 6^3 \times (7-2)^2}$

26. Simplify, then evaluate.

$$\frac{(-2)^6 \times (-2)^2}{(-2)^3 \times (-2)^0}$$

27. Simplify, then evaluate.

$$\frac{(2^4)^3 \times (2^2)^4}{(2^4 \times 2^4)^2}$$

28. Simplify, then evaluate.

$$(4^6 \div 4^3)^2 - (2^8 \div 2^6)^2$$

29. Simplify, then evaluate.

$$\left[(-2)^4 \times (-2)^3\right] - \left[(-3)^4 \div (-3)^3\right]$$

### Problem

Evaluate:  $\frac{(15)^2 - (6)^2}{(9)^2 - 2(3)^2}$  Show your calculations.

## January Exam 2011 Review - Unit 2

### Answer Section

#### MULTIPLE CHOICE

1. ANS: B                   PTS: 1                   DIF: Easy               REF: 2.1 What Is a Power?  
LOC: 9.N1               TOP: Number           KEY: Conceptual Understanding
2. ANS: B                   PTS: 1                   DIF: Moderate       REF: 2.1 What Is a Power?  
LOC: 9.N1               TOP: Number           KEY: Procedural Knowledge
3. ANS: A                   PTS: 1                   DIF: Moderate       REF: 2.1 What Is a Power?  
LOC: 9.N1               TOP: Number           KEY: Procedural Knowledge
4. ANS: D                   PTS: 1                   DIF: Moderate       REF: 2.1 What Is a Power?  
LOC: 9.N1               TOP: Number           KEY: Procedural Knowledge
5. ANS: C                   PTS: 1                   DIF: Moderate       REF: 2.1 What Is a Power?  
LOC: 9.N1               TOP: Number           KEY: Conceptual Understanding
6. ANS: A                   PTS: 1                   DIF: Moderate       REF: 2.1 What Is a Power?  
LOC: 9.N1               TOP: Number           KEY: Conceptual Understanding
7. ANS: B                   PTS: 1                   DIF: Easy  
REF: 2.2 Powers of Ten and the Zero Exponent                   LOC: 9.N1  
TOP: Number           KEY: Procedural Knowledge
8. ANS: B                   PTS: 1                   DIF: Easy  
REF: 2.2 Powers of Ten and the Zero Exponent                   LOC: 9.N1  
TOP: Number           KEY: Procedural Knowledge
9. ANS: A                   PTS: 1                   DIF: Moderate  
REF: 2.2 Powers of Ten and the Zero Exponent                   LOC: 9.N1  
TOP: Number           KEY: Procedural Knowledge
10. ANS: C                   PTS: 1                   DIF: Moderate  
REF: 2.3 Order of Operations with Powers                   LOC: 9.N1  
TOP: Number           KEY: Procedural Knowledge
11. ANS: A                   PTS: 1                   DIF: Moderate  
REF: 2.3 Order of Operations with Powers                   LOC: 9.N1  
TOP: Number           KEY: Procedural Knowledge
12. ANS: B                   PTS: 1                   DIF: Moderate  
REF: 2.3 Order of Operations with Powers                   LOC: 9.N1  
TOP: Number           KEY: Procedural Knowledge
13. ANS: D                   PTS: 1                   DIF: Difficult  
REF: 2.3 Order of Operations with Powers                   LOC: 9.N1  
TOP: Number           KEY: Procedural Knowledge
14. ANS: A                   PTS: 1                   DIF: Easy               REF: 2.4 Exponent Laws I  
LOC: 9.N2               TOP: Number           KEY: Procedural Knowledge
15. ANS: A                   PTS: 1                   DIF: Easy               REF: 2.4 Exponent Laws I  
LOC: 9.N2               TOP: Number           KEY: Procedural Knowledge
16. ANS: A                   PTS: 1                   DIF: Easy               REF: 2.4 Exponent Laws I  
LOC: 9.N2               TOP: Number           KEY: Procedural Knowledge
17. ANS: D                   PTS: 1                   DIF: Easy               REF: 2.4 Exponent Laws I  
LOC: 9.N2               TOP: Number           KEY: Procedural Knowledge
18. ANS: C                   PTS: 1                   DIF: Moderate       REF: 2.4 Exponent Laws I  
LOC: 9.N2               TOP: Number           KEY: Procedural Knowledge

- |     |                     |                       |  |                           |
|-----|---------------------|-----------------------|--|---------------------------|
| 19. | ANS: C<br>LOC: 9.N2 | PTS: 1<br>TOP: Number | DIF: Moderate<br>KEY: Procedural Knowledge     | REF: 2.4 Exponent Laws I  |
| 20. | ANS: D<br>LOC: 9.N2 | PTS: 1<br>TOP: Number | DIF: Moderate<br>KEY: Procedural Knowledge     | REF: 2.4 Exponent Laws I  |
| 21. | ANS: C<br>LOC: 9.N2 | PTS: 1<br>TOP: Number | DIF: Moderate<br>KEY: Procedural Knowledge     | REF: 2.4 Exponent Laws I  |
| 22. | ANS: D<br>LOC: 9.N2 | PTS: 1<br>TOP: Number | DIF: Moderate<br>KEY: Conceptual Understanding | REF: 2.5 Exponent Laws II |
| 23. | ANS: A<br>LOC: 9.N2 | PTS: 1<br>TOP: Number | DIF: Moderate<br>KEY: Conceptual Understanding | REF: 2.5 Exponent Laws II |

## SHORT ANSWER

24. ANS:

The answers for i and ii are positive.

PTS: 1                      DIF: Moderate                      REF: 2.1 What Is a Power?  
LOC: 9.N1                      TOP: Number                      KEY: Conceptual Understanding

25. ANS:

-5

PTS: 1                      DIF: Difficult                      REF: 2.3 Order of Operations with Powers  
LOC: 9.N1                      TOP: Number                      KEY: Procedural Knowledge

26. ANS:

$$(-2)^5 = -32$$

PTS: 1                      DIF: Moderate                      REF: 2.4 Exponent Laws I  
LOC: 9.N2                      TOP: Number                      KEY: Procedural Knowledge

27. ANS:

$$\frac{(2^4)^3 \times (2^2)^4}{(2^4 \times 2^4)^2} = \frac{2^{20}}{2^{16}} = 2^4 = 16$$

PTS: 1                      DIF: Moderate                      REF: 2.5 Exponent Laws II  
LOC: 9.N2                      TOP: Number                      KEY: Procedural Knowledge

28. ANS:

$$(4^6 \div 4^3)^2 - (2^8 \div 2^6)^2 = (4^3)^2 - (2^2)^2 = 4^6 - 2^4 = 4080$$

PTS: 1                      DIF: Moderate                      REF: 2.5 Exponent Laws II  
LOC: 9.N2                      TOP: Number                      KEY: Procedural Knowledge

29. ANS:

$$\left[ (-2)^4 \times (-2)^3 \right] - \left[ (-3)^4 \div (-3)^3 \right] = (-2)^7 - (-3)^1 = -125$$

PTS: 1                      DIF: Moderate                      REF: 2.5 Exponent Laws II  
LOC: 9.N2                      TOP: Number                      KEY: Procedural Knowledge

## PROBLEM

30. ANS:

$$\begin{aligned} & \frac{(15)^2 - (6)^2}{(9)^2 - 2(3)^2} \\ &= \frac{225 - 36}{81 - 18} \\ &= \frac{189}{63} \\ &= 3 \end{aligned}$$

PTS: 1

LOC: 9.N1

DIF: Moderate

TOP: Number

REF: 2.3 Order of Operations with Powers

KEY: Problem-Solving Skills | Communication