Name: key

Learning Outcomes Covered:

2F: I can apply the exponent law for a power of a power.

2G: I can apply the exponent law for a power of a product.

2H: I can apply the exponent law for a power of a quotient.

CONTENT Assessment Questions:

1. Write each expression as a product of powers or a quotient of powers. Do not evaluate.

   a) $[(-4) \times 3]^2$ $= (-4)^2 \times 3^2$

   b) $[(-12) \div (-6)]^2$ $= (-12)^2 \div (-6)^2$

   c) $\left(\frac{1}{10}\right)^6 = \frac{1^6}{10^6}$

2. Write as a power.

   a) $(3^4)^2$ $= 3^8$

   b) $(5^0)^3$ $= 5^0$

   c) $-(7^2)$ $= -7^2$

3. Simplify, then evaluate each expression.

   a) $(3^2 \times 4^3)^2 - (4^4 \div 4^2)^2$

   $= 3^4 \times 4^6 - (4^2)^2$

   $= 81 \times 4096 - 256$

   $= 331,776 - 256$

   $= 331,520$

   b) $(2^3 \div 2^2)^3 + (7^4 \times 7^3)^0$

   $= (2^1)^3 + (7^7)^0$

   $= 2^3 + 7^0$

   $= 8 + 1$

   $= 9$

CURRICULAR COMPETENCIES Questions:

1. Why is the value of $[(-3)^3]^2$ positive and the value of $[(-3)^3]^3$ negative? (CmRp)

   $3 \times 2 = 6$ ∴ even power ⇒ positive

   $3 \times 3 = 9$ ∴ odd power ⇒ negative.

2. Evaluate the following expressions using two different ways. (US)

a) $(2^3 \times 2^1)^2$

$= (2^4)^2$

$= 2^8 = 256$

or

$2^6 \times 2^2$

$= 2^8$

$= 256$

b) $(5^4 \div 5^2)^2$

$= (5^2)^2$

$= 5^4 = 625$

or

$5^8 \div 5^4$

$= 5^4 = 625$

c) $(10^2)^4 \div (10^3)^2$

$10^8 \div 10^6$

$= 10^2 = 100$

or

$(100)^4 \div (1000)^2$

$= 100000000 \div 1000000$

$= 100$

3. Find and correct any errors in each solution. (RA, CmRp)

a) $(4^3 \times 2^2)^2 = (8^5)^2$
$= 8^{10}$
$= 1\,073\,741\,824$

$= (64 \times 4)^2$

$= (256)^2 = 65536$

b) $[(-10)^3]^4 = (-10)^7$
$= -10\,000\,000$

$= (-10)^{12} = 1{,}000{,}000{,}000{,}000$

c) $(2^2 + 2^3)^2 = (2^5)^2$
$= 2^{10}$
$= 1024$

$= (4+8)^2$

$= (12)^2 = 144$

ONGOING LEARNING ACTIVITIES:

CORE: Page 84: Curricular Competencies: 12, 13, 14bceg, 16ad, 19bd
Content: (4, 5, 6, 8, 10) do at least 3 of each question, 14adfh, 16bcef, 19ac
ADVANCED: Page 85: 20, 21