Chapter 3 Practice Test

Chapter 3 Practice Test Page 122 Question 1

The value 3 in the power 4^3 is called the exponent. This is choice C.

Chapter 3 Practice Test Page 122 Question 2

The coefficient in the expression $-(-3)^5$ is -1. This is choice B.

Chapter 3 Practice Test Page 122 Question 3

$(3^2)^4$
$= 3^2 \times 3^2 \times 3^2 \times 3^2$
$= (3 \times 3)\ (3 \times 3)\ (3 \times 3)\ (3 \times 3)$
This is choice C.

Chapter 3 Practice Test Page 122 Question 4

$(5 \times 4)^2$
$= (5 \times 4) \times (5 \times 4)$
$= (5 \times 5) \times (4 \times 4)$
$= 5^2 \times 4^2$
This is choice D.

Chapter 3 Practice Test Page 122 Question 5

$$\frac{(-7)^3(-7)^5}{(-7)^2}$$

$= \dfrac{(-7)^8}{(-7)^2}$ Apply the exponent law. Since the bases are the same, add the exponents.
$= (-7)^6$ Since the bases are the same, subtract the exponents.
This is choice A.

Chapter 3 Practice Test Page 122 Question 6

$(7 - 2)^3 + 48 \div (-2)^4$ Perform the operation within the parentheses.
$= (5)^3 + 48 \div (-2)^4$ Evaluate the powers.
$= 125 + 48 \div 16$ Divide.
$= 125 + 3$
$= 128$
This is choice B.

Chapter 3 Practice Test Page 122 Question 7

$10^5 \times 5^5$
$= (10 \times 5)^5$ Apply the exponent law. Since the bases have the same exponent, multiply the bases.
$= 50^5$
$10^5 \times 5^5$ written with only one exponent is 50^5.

Chapter 3 Practice Test Page 122 Question 8

$\frac{5^6}{8^6} = \left(\frac{5}{8}\right)^6$ Since the bases have the same exponent, divide the bases.

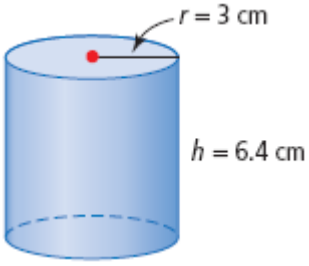
$\frac{5^6}{8^6}$ written with only one exponent is $\left(\frac{5}{8}\right)^6$.

Chapter 3 Practice Test Page 122 Question 9

$\frac{4^4 \times 4}{4^2}$
$= \frac{4 \times 4 \times 4 \times 4 \times 4}{4 \times 4}$
$= \frac{1024}{16}$
$= 64$

Chapter 3 Practice Test Page 122 Question 10

In the formula $V = \pi r^2 h$, replace r with 3 cm and h with 6.4 cm.
$V = \pi r^2 h$
$V = \pi (3^2)(6.4)$ Evaluate the power.
$V = \pi (9)(6.4)$ Substitute for π and multiply.
$V = 181.0$
The volume of the cylinder is 181.0 cm^3.



Chapter 3 Practice Test Page 122 Question 11

In the formula $d = 4.9t^2$, replace t with 7 s.
$d = 4.9t^2$
$d = 4.9(7)^2$ Evaluate the power.
$d = 4.9(49)$ Multiply.
$d = 240.1$
The skydiver will fall 240.1 m.

Chapter 3 Practice Test Page 122 Question 12

Example:
a) (1 – 3) ^ 4 ÷ 4 =
4

b) (–2) ^ 0 + 4 × 17 ^ 0 =
5

c) 16 – 9 × (2 ^ 3) + (–4) ^ 2 =
–40

Chapter 3 Practice Test Page 122 Question 13

$243 = 3^0 \times 3^5$
$243 = 3^1 \times 3^4$
$243 = 3^2 \times 3^3$
Since $243 = 3^5$, the sum of the exponents on the powers with base 3 must equal 5. There are only three ways to write a sum of 5 using whole numbers: 0 + 5, 1 + 4, and 2 + 3.

Chapter 3 Practice Test Page 123 Question 14

In the formula $V = 0.05hc^2$, replace h with 32 m and replace c with 2.3 m.
$V = 0.05hc^2$
$V = 0.05(32)(2.3)^2$ Evaluate the power.
$V = 0.05(32)(5.29)$ Multiply.
$V = 8.5$
The volume of the tree to the nearest tenth of a cubic metre is 8.5 m^3.

Chapter 3 Practice Test Page 123 Question 15

a) In his first step, Nabil should have added 5 and 3. Then, he should have applied the exponent of 2 to the sum of 8.

b) $(12 \div 4)^4 + (5 + 3)^2$
$= (3)^4 + (8)^2$ Perform the operations within the parentheses.
$= 81 + 64$ Evaluate the powers.
$= 145$
The correct answer is 145.

Chapter 3 Practice Test Page 123 Question 16

a)

Days	Number of bacteria as the product of a coefficient and a power	Number of bacteria
Start	$300(3)^0$	300
1	$300(3)^1$	900
2	$300(3)^2$	2 700
3	$300(3)^3$	8 100
4	$300(3)^4$	24 300
5	$300(3)^5$	72 900
6	$300(3)^6$	218 700
7	$300(3)^7$	656 100

b) A formula that could be used to calculate the number of bacteria, B, after d days is $B = 300(3)^d$.

c) To find the number of bacteria after 9 days, use the formula $B = 300(3)^d$, and replace d with 9.

$B = 300(3)^d$
$B = 300(3)^9$ Evaluate the exponent.
$B = 300(19\ 683)$ Multiply.
$B = 5\ 904\ 900$
After 9 days, there will be 5 904 900 bacteria.

d) Each successive day, there are three times as many bacteria as the day before. To find the number of bacteria in the previous 24-h period, divide the previous total by 3.
$300 \div 3 = 100$
The previous day there would have been 100 bacteria.