

Chapter 4 Test

Multiple Choice

For #1 to 6, select the best answer.

1. Which of the following numbers is not both a perfect square and a perfect cube?

A 64
B 729
C 1000
D 4096

2. Which of the following expressions represents a perfect square?

A $(-0.1)^{-2}$
B $\sqrt[3]{32}$
C $\sqrt[3]{9}$
D $\frac{7}{2^{-1}}$

3. Which of the following numbers has a value that lies between 2 and 3?

A $\sqrt{3}$
B $\sqrt{7}$
C $\sqrt{11}$
D $\sqrt{15}$

4. What is $7^{\frac{-3}{2}}$ expressed in radical form?

A $-\sqrt{7^3}$
B $(\sqrt[3]{-7})^2$
C $\frac{1}{\sqrt[3]{7^2}}$
D $\frac{1}{\sqrt{7^3}}$

5. Two students were simplifying expressions involving powers. Their partial solutions are shown.

Monique

$$\left(\frac{2^3}{(4-3^2)}\right)^{-2}$$
$$= \left(\frac{2^3}{1^2}\right)^{-2}$$
$$= 8^{-2}$$

Steven

$$\left(\frac{3x^2y^{-4}}{x^3}\right)^{-2}$$
$$= \frac{(3^{-2})(x^{-4})(y^8)}{x^{-6}}$$
$$= \frac{(y^8)}{9x^{-2}}$$

If Monique and Steven complete the remaining part of their solution without making any errors, which of the following statements will be true?

- A Both students have a correct solution.
B Both students have an incorrect solution.
C Monique has an incorrect solution and Steven has a correct solution.
D Monique has a correct solution and Steven has an incorrect solution.

6. When $\sqrt{80}$ is simplified using the form $a\sqrt{b}$, what is the numerical value of the radicand?

A 5
B 10
C 12
D 20

Short Answer

7. Simplify each expression. Express the answer using positive exponents.

a) $\left[\left(5^{\frac{3}{2}}\right)\left(5^{\frac{1}{3}}\right)\right]^6$

b) $\frac{2^{-1}a^2b^{-3}}{4a^3b^{-5}}$

Name: _____

Date: _____

BLM 4-10
(continued)

8. Express each radical as a power.

a) $\sqrt[3]{6^2}$

b) $2\sqrt{5}$

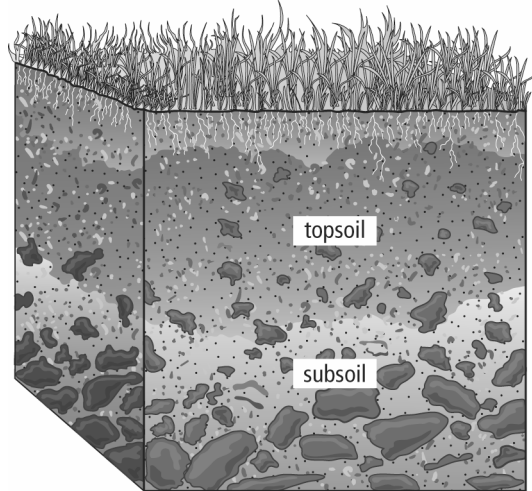
Extended Response

9. In 1963, 18 wood bison were introduced to the Mackenzie Bison Sanctuary near Great Slave Lake, NT.

a) Wildlife biologists predicted that the bison population would increase by a growth factor of 1.215 per year from 1963 to 1987. Use the expression $18(1.215)^t$, where t represents the number of years since 1963, to predict the bison population in 1987.

b) In 1987, there were actually 1718 bison. After adjusting the growth factor, the biologists used the expression $1718(1.103)^t$ to represent the population growth. Based on this expression, what is the projected wood bison population for 2010?

10. For a science project, Devin wants to create a grassland soil profile that is a perfect cube.



a) If the cube had a volume of $15\frac{5}{8}$ ft³, what would be its edge length?

b) Devin decides to build a square ramp along each edge of his soil profile. What will be the surface area of each ramp? How much wood will he need in total?