◆ *Homework Check:* **none**

◆ *Note:* **Prerequisite Skills**

A perfect square is a number that is multiplied by itself. The square root of a number is the inverse operation of squaring. Using your integer and exponent rules always applies. Recall the five exponent rules you are familiar with:

Multiplying Powers: keep the base and add the exponents
Dividing Powers: keep the base and subtract the exponents
Power of a Power: keep the base and multiply the exponents
Zero Exponent: any base raised to the exponent zero is equal to one
Negative Exponent: a negative exponent means reciprocate the base

Examples:

$$4^2 \times 4^3 =$$
$$= 4^{2+3}$$
$$= 4^5$$
$$= 1024$$

$$a^4 \times a^7 =$$
$$= a^{4+7}$$
$$= a^{11}$$

$$\left(-2x^3\right)\left(3x^5\right) =$$
$$= (-2)(3)x^{3+5}$$
$$= -6x^8$$

$$\frac{4^8}{4^5} =$$
$$= 4^{8-5}$$
$$= 4^3$$
$$= 64$$

$$\frac{a^{12}}{a^5} =$$
$$= a^{12-5}$$
$$= a^7$$

$$\frac{88x^4}{-11x^2} =$$
$$= \frac{88}{-11}x^{4-2}$$
$$= -8x^2$$

$$\left(3^2\right)^3 =$$
$$= 3^{2(3)}$$
$$= 3^6$$
$$= 729$$

$$\left(a^5\right)^3 =$$
$$= a^{5(3)}$$
$$= a^{15}$$

$$\left(3x^2\right)^4 =$$
$$= 3^4 x^{2(4)}$$
$$= 81x^8$$

$3^0 =$

$= 1$

$a^0 =$

$= 1$

$\left(2x^3\right)^0 =$

$= 1$

$3^{-2} =$

$= \left(\dfrac{1}{3}\right)^2$

$= \dfrac{1}{9}$

$\left(x^2\right)^{-4} =$

$= x^{-8}$

$= \left(\dfrac{1}{x}\right)^8$

$= \dfrac{1}{x^8}$

$\dfrac{x^4}{x^7} =$

$= x^{-3}$

$= \dfrac{1}{x^3}$

◆ *Homework:* **5-1 Prerequisite Skills**

Lesson: 5-1 Prerequisite Skills

1. Evaluate. Round to the nearest tenth when necessary. **(12 marks)**

a) $\sqrt{49} =$ **b)** $-\sqrt{64} =$ **c)** $\sqrt{10} =$

d) $-\sqrt{81} =$ **e)** $2\sqrt{7} =$ **f)** $-\sqrt{9} =$

g) $3\sqrt{16} =$ **h)** $\sqrt{\dfrac{8}{\pi}} =$ **i)** $\sqrt[3]{27} =$

j) $2\sqrt[3]{125} =$ **k)** $\sqrt[4]{16} =$ **l)** $\sqrt[5]{32} =$

2. The formula $T = 2\pi\sqrt{\dfrac{L}{9.8}}$ gives time, T seconds, for one complete swing of a pendulum with length L metres. Given each of the clock pendulum, calculate the time it takes to complete one swing. **(4 marks)**

a) $1.3m$ **b)** $22cm$

3. Solve each of the following equations. Show your work.

a) $x - 12 = -5$ **b)** $-3x = 15$ **c)** $5x - 3 = 12$

(1, 1, 2)

d) $-3x + 4 = 25$ **e)** $6x - 7 = -x$ **f)** $3x - 11 = -2x + 9$

(2, 2, 2)

g) $2x + 8 = -7x - 2$ **h)** $2(x - 3) + 5 = 3x + 7$

(2, 3)

4. The equation $T = 10d + 20$ gives the temperature, T degrees Celsius, at a depth of d kilometres below the surface of the earth. Determine the depth of a mine shaft in which the temperature is as indicated. **(4 marks)**

a) $20°C$ **b)** $-15°C$

5. Evaluate each of the following. Decimal approximations will not be accepted.

a) $3^3 =$ **b)** $5^3 =$ **c)** $(-5)^2 =$

(1, 1, 1)

d) $3^{-2} =$ **e)** $8^0 =$ **f)** $\left(\dfrac{1}{2}\right)^2 =$

(2, 1, 2)

g) $(-7)^{-1} =$ **h)** $\left(\dfrac{3}{5}\right)^{-2} =$ **i)** $\left(\dfrac{2}{3}\right)^{3} =$

(1, 2, 2)

j) $\left(\dfrac{-2}{5}\right)^{-2} =$ **k)** $-2x^{0} =$ **l)** $(-2)^{-5} =$

(2, 1, 2)

6. Simplify and evaluate each of the following. Show your work. Decimal answers will not be accepted.

   a) $2^{3} =$ **b)** $3^{2} =$ **c)** $(-2)^{2} =$

(1, 1, 1)

   d) $-2^{2} =$ **e)** $4^{3} =$ **f)** $4^{-3} =$

(1, 1, 2)

   g) $\left(\dfrac{2}{3}\right)^{2} =$ **h)** $\left(\dfrac{2}{3}\right)^{-2} =$ **i)** $\left(\dfrac{-2x}{3}\right)^{0} =$

(1, 2, 2)

   j) $-3x\left(2x^{3}\right) =$ **k)** $4(-2x)^{2} =$ **l)** $\dfrac{15x^{6}}{-3x} =$

(2, 2, 2)