3.2 – Work With Exponents Worksheet

MPM1D

1. What is the base of each power?

a) 5^2 **b)** 2^3 **c)** $(-3)^4$

d) -3^4 **e)** $\left(\frac{2}{3}\right)^2$ **f)** 2.1^2

2. Write each expression as a power (do not evaluate)

a) $6 \times 6 \times 6 \times 6 \times 6 \times 6 \times 6$ **b)** 9×9 **c)** $0.4 \times 0.4 \times 0.4$

d) $(-7)\ (-7)\ (-7)\ (-7)\ (-7)$ **e)** $(-1.3)\ (-1.3)\ (-1.3)\ (-1.3)$ **f)** $\left(\frac{2}{5}\right) \times \left(\frac{2}{5}\right) \times \left(\frac{2}{5}\right) \times \left(\frac{2}{5}\right)$

3. Write each power in expanded form, then evaluate

a) 3^4 **b)** 5^3 **c)** $(-2)^2$

d) -3^4 **e)** $\left(\frac{1}{4}\right)^2$ **f)** 0.4^3

4. Evaluate

a) 6^3 **b)** 2^7 **c)** -4^2

d) $(-2)^6$ **e)** 1^{12} **f)** $\left(-\frac{4}{5}\right)^2$

5. Use the correct order of operations to evaluate each expression.

a) $2^4 + 3^2$ **b)** $6^3 - 6$ **c)** $(2 + 5)^2$

d) $(2^2 + 5^2)$ **e)** $6\left(\frac{1}{3}\right)^2$ **f)** $8^2 \div 2^4$

6. Evaluate each expression for the given values of the variables.

a) $2x^2 + 5$ for $x = 3$ **b)** $m^2 + m - 4$ for $m = 3$ **c)** $x^2 - y^2$ for $x = 7, y = 5$

7. Substitute the given values into each expression. Then, evaluate the expression. Round your answers to one decimal place where necessary.

a) $6s^2$ $s = 5$

b) πr^2 $r = 2.5$

c) $a^2 + b^2$ $a = 3, b = 4$

d) $\pi r^2 h$ $r = 2.3, h = 5.2$

e) $\frac{4}{3}\pi r^3$ $r = 1.5$

f) $x^2 - 2x - 24$ $x = -6$

Answers

1. a) 5 **b)** 2 **c)** (–3) **d)** 3 **e)** 2/3 **f)** 2.1

2. a) 6^7 **b)** 9^2 **c)** 0.4^3 **d)** $(-7)^5$ **e)** $(-1.3)^4$ **f)** $(\frac{2}{5})^4$

3. a) $3 \cdot 3 \cdot 3 \cdot 3$; 81 **b)** $5 \cdot 5 \cdot 5$; 125 **c)** $(-2) \cdot (-2)$; 4 **d)** $-(3 \cdot 3 \cdot 3 \cdot 3)$; –81 **e)** $\frac{1}{4} \cdot \frac{1}{4}; \frac{1}{16}$ **f)** $0.4 \cdot 0.4 \cdot 0.4$; 0.064

4. a) 216 **b)** 128 **c)** –16 **d)** 64 **e)** 1 **f)** $\frac{16}{25}$

5. a) 25 **b)** 210 **c)** 49 **d)** 29 **e)** 2/3 **f)** 4

6. a) 23 **b)**8 **c)** 24

7. a) 150 **b)** 19.6 **c)** 25 **d)** 86.4 **e)** 14.1 **f)** 24