3.2 – Work With Exponents Worksheet
MPM1D

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1. What is the base of each power?

   a) 5^2

b) 2^3

c) $(-3)^4$

   d) -3^4

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

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) $\left(\dfrac{2}{5}\right) \times \left(\dfrac{2}{5}\right) \times \left(\dfrac{2}{5}\right) \times \left(\dfrac{2}{5}\right)$

3. Write each power in expanded form, then evaluate

a) 3^4

b) 5^3

c) $(-2)^2$

d) -3^4

e) $\left(\dfrac{1}{4}\right)^2$

f) 0.4^3

4. Evaluate

a) 6^3

b) 2^7

c) -4^2

d) $(-2)^6$

e) 1^{12}

f) $\left(-\dfrac{4}{5}\right)^2$

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) $6\left(\dfrac{1}{3}\right)^2$

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) $6s^2$ $\qquad$ $s = 5$

b) πr^2 $\qquad$ $r = 2.5$

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

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

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

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

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)** $\left(\frac{2}{5}\right)^4$

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