1. Simplify: $20 + 4^3 \div (-8)$

a) 4          b) -4          c) 12          d) -10.5

$$20 + 64 \div (-8)$$

$$20 - 8 = 12$$

2. Simplify:     $(2a - 4) + 2(a - 5) - 3(a+1)$

a) $7a - 11$          b) $a - 17$          c) $a - 11$          d) $7a - 17$

$2a - 4 + 2a - 10 - 3a - 3$

$= a - 17$

3. Evaluate the expression: $4a^2 - 4ab + b^2$, when a = 2 and b = 5

a) -14          b) 1          c) 66          d) 81

$4(2)^2 - 4(2)(5) + (5)^2$

$= 16 - 40 + 25 = -24 + 25$

$= 1$

4. Firefighters use the formula S = 0.5P + 26 to compute the horizontal range S in feet of water from a particular hose, where P is the nozzle pressure in pounds.  Find the horizontal range if pressure is 90 lb.

a) 44 feet                          b) 450 feet                 c) 19 feet                          d) 71 feet

$$S = .5(90) + 26$$
$$= 45 + 26 = 71$$

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5. Simplify:     $2x^2\left(-3x^2\right)^3$

a) $54x^{12}$                          b) $18x^8$                          c) $-18x^{12}$                          d) $-54x^8$

$$2X^2\left(-27X^6\right) = -54X^8$$

6. Simplify: $\left(\dfrac{2u^{-5}v^2}{8w}\right)^{-2}$

a) $\dfrac{w^2v^4}{4u^7}$

b) $\dfrac{16v^4}{w^2u^{10}}$

c) $\dfrac{16w^2u^{10}}{v^4}$

d) $\dfrac{u^7v^4}{4w^2}$

$$\left(\frac{8w}{2u^{-5}v^2}\right)^2 = \left(\frac{4u^5w}{v^2}\right)^2 = \frac{16u^{10}w^2}{v^4}$$

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7. Express in scientific notation: 0. 0000056

a) $5.6\times10^{-6}$

b) $5.6\times10^{6}$

c) $5.6\times10^{-5}$

d) $5.6\times10^{-7}$

$$a\times10^{b}$$

$$1 \leq a < 10$$

8. Expand: $1.20 \times 10^5$

a) 12000000          b) 1200000          c) 120000          d) 12000

1.20 0 0 0