Exponents and Order of Operations

1. Identify the mistake and then list the correct answer for each of the following.

   a. $3 \times 2^2 = 36$

   b. $4 + 8 \div 2^2 = 3$

   c. $3 + 6^0 \times 3 = 12$

2. Simplify each of the following.

   a. $14 + 3\left[(15 - 6) - \left(2 + 4^2\right)\right]$

   b. $3 + \left[\left(2^2 - 1\right)^3\right]$

   c. $\dfrac{(-3)^3 - (1^4 + 2^2)}{(-6)}$

   d. $4 - 2^3\left[(5 + 3) \div 2^2\right]$

   e. $(-5)^2 + \dfrac{5(3 - 1)}{2} + 12 \div 4$

   f. $\dfrac{40 - 2^2 - 3^3}{2(3 + 4) - 3}$

   g. $18 \div 6 + \left[(-2)^0 - \left(6 - 2^2\right)^2\right]$

   h. $-4 - 2^3\left[(-2)(4 - 2)^3 + \left(4^0 - 2\right)^2\right]$

   i. $\dfrac{(8 - 6)^4 + 32}{28 - 3^4}$

3. Insert any operation signs [parentheses,+,−,×,÷] so that the given numbers make the statement true.

a. $2 \quad 3^2 \quad 5 \quad 7 = 30$

b. $5 \quad 7 \quad 4^2 \quad 8 \quad 6 = 8$

c. $8 \quad 5 \quad 2^2 \quad 1 = 35$

d. $6 \quad 5 \quad 8 \quad 3^3 \quad 4 = -23$

Answers

1a) Multiplied before evaluating the exponent $\rightarrow$ correct answer: 12

1b) Added before dividing $\rightarrow$ correct answer: 6

1c) Added before multiplying $\rightarrow$ correct answer: 6

2a. -13

2b. 30

2c. $\frac{16}{3}$

2d. -12

2e. 33

2f. $\frac{9}{11}$

2g. 0

2h. 116

2i. $-\frac{48}{53}$

3a. $2 \times 3^2 + (5 + 7) = 30$

3b. $5 + 7 - (4^2 + 8) \div 6 = 8$

3c. $8 \times 5 - (2^2 + 1) = 35$

3d. $(6 - 5) \times 8 - (3^3 + 4) = -23$