# Transposition Worksheet 3

**Solve the following:**

(1) $Y_P Z_P = Y_Q n Z_Q$ Solve for $Y_Q$.

(2) $X = p^2 X_n$ Solve for $p$.

(3) $K = \frac{4(0.6)ab(c+1)}{L}$ Solve for $a$.

(4) $6x^2y = \frac{\sqrt{b}(c-1)}{a}$ Solve for $b$.

(5) $N_t = c\sqrt{6a}$ Solve for $a$.

(6) $\frac{P^2Q^2}{2} = \frac{3\pi R^2}{1-N}$ Solve for $N$.

(7) $4\sqrt{Q} = \frac{xy}{2b}$ Solve for $Q$.

(8) $E_s = \frac{(4t)(x-3)}{E_t}$ Solve for $x$.

(9) $\frac{3ab^2}{2N_1} = \frac{(N_2-6)(N_3+1)}{N_4}$ Solve for $N_3$.

(10) $\frac{x-y}{a+b} = \frac{2p}{Q^2}$ Solve for $Q$.

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## Answer Key

(1) $Y_P Z_P = Y_Q n Z_Q$ Solve for $Y_Q$.

$$Y_Q = \frac{Y_P Z_P}{n Z_Q}$$

(2) $X = p^2 X_n$ Solve for $p$.

$$p^2 = \frac{X}{X_n}$$
$$p = \sqrt{\frac{X}{X_n}}$$

(3) $K = \frac{4(0.6)ab(c+1)}{L}$ Solve for $a$.

$$KL = 4(0.6)ab(c+1)$$
$$a = \frac{KL}{4(0.6)b(c+1)}$$

(4) $6x^2y = \frac{\sqrt{b}(c-1)}{a}$ Solve for $b$.

$$6x^2ya = \sqrt{b}(c-1)$$
$$\sqrt{b} = \frac{6x^2ya}{c-1}$$
$$b = \left(\frac{6x^2ya}{c-1}\right)^2$$

(5) $N_t = c\sqrt{6a}$ Solve for $a$.

$$\sqrt{6a} = \frac{N_t}{c}$$
$$6a = \left(\frac{N_t}{c}\right)^2$$
$$a = \frac{{N_t}^2}{6c^2}$$

(6) $\frac{P^2Q^2}{2} = \frac{3\pi R^2}{1-N}$ Solve for $N$.

$$(1-N)P^2Q^2 = 6\pi R^2$$
$$1-N = \frac{6\pi R^2}{P^2Q^2}$$
$$N = 1 - \frac{6\pi R^2}{P^2Q^2}$$

(7) $4\sqrt{Q} = \frac{xy}{2b}$ Solve for $Q$.

$$\sqrt{Q} = \frac{xy}{8b}$$
$$Q = \frac{x^2y^2}{64b^2}$$

(8) $E_s = \frac{(4t)(x-3)}{E_t}$ Solve for $x$.

$$E_s \cdot E_t = (4t)(x-3)$$
$$x - 3 = \frac{E_s \cdot E_t}{4t}$$
$$x = \frac{E_s \cdot E_t}{4t} + 3$$

(9) $\frac{3ab^2}{2N_1} = \frac{(N_2-6)(N_3+1)}{N_4}$ Solve for $N_3$.

$$\frac{3ab^2N_4}{2N_1} = (N_2-6)(N_3+1)$$
$$(N_3+1) = \frac{3ab^2N_4}{2N_1(N_2-6)}$$
$$N_3 = \frac{3ab^2N_4}{2N_1(N_2-6)} - 1$$

(10) $\frac{x-y}{a+b} = \frac{2p}{Q^2}$ Solve for $Q$.

$$Q^2(x-y) = 2p(a+b)$$
$$Q^2 = \frac{2p(a+b)}{x-y}$$
$$Q = \sqrt{\frac{2p(a+b)}{x-y}}$$