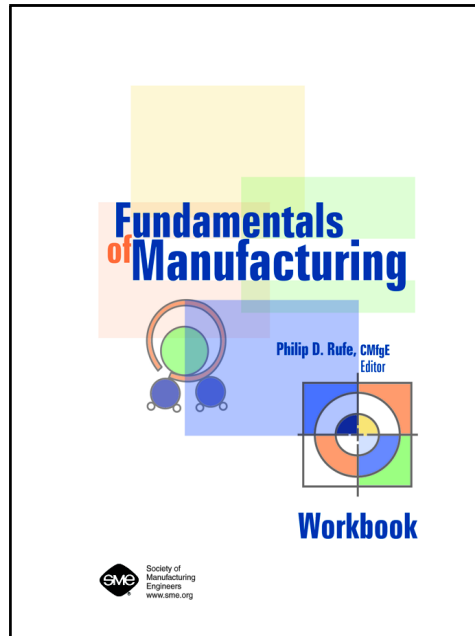


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# Mathematical Fundamentals

1. Solve the following equation for  $x$ .

$$\log_{10} x = 4 - \log_{10}(4x - 2)$$

- a) 16.06, 14.06
- b) 50.25, -49.75
- c) 25.75, 15.75
- d) 50.25, 49.75

2. Solve the following equations for  $x$  and  $y$ .

$$6x + 3y = 10$$

$$3x + 4y = 20$$

- a)  $x = 8, y = 6$
- b)  $x = -1.33, y = 6$
- c)  $x = 3, y = 0$
- d)  $x = 1.33, y = 6$

3. The volume of a cylindrical tank is  $10 \text{ m}^3$ . Assuming the tank's height is twice its diameter, find the tank's diameter.
4. Which of the following lines is parallel to the line with the equation  $y = \frac{1}{2}x + 4$ ?
- a)  $0.55 \text{ m}$   
b)  $0.93 \text{ m}$   
c)  $1.85 \text{ m}$   
d)  $3.70 \text{ m}$
- a)  $y = -\frac{1}{2}x + 4$   
b)  $y = 2x + 4$   
c)  $x = \frac{1}{2}y + 4$   
d)  $2x = 4y - 4$

5. Find the distance between the following two points.

$$x_1 = 10, y_1 = 10$$

$$x_2 = 2, y_2 = 3$$

- a) 6.6
- b) 8.4
- c) 10.6
- d) 12.4

6. Company XYZ wants to randomly select a committee of three people out of the five-person engineering section. Diane is one of the five people. What is the probability that Diane will be on the committee?

- a) 20%
- b) 50%
- c) 75%
- d) 60%