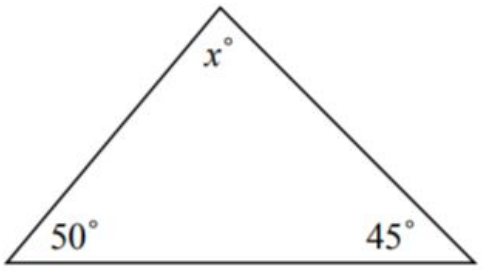
Would you like to receive feedback from our execs? (marking your solutions, giving corrections, etc.)
Yes/No: _____

Multiple Choice

Highlight the correct answer for each question.

1. In the diagram, what is the value of x?



(A) 65 (B) 75 (C) 85 (D) 95 (E) 105

2. The value of $(1)^{10} + (-1)^8 + (-1)^7 + (1)^5$ is

(A) 0 (B) 1 (C) 2 (D) 16 (E) 4

3. An integer is multiplied by 2 and the result is then multiplied by 5. The final result could be

(A) 64 (B) 32 (C) 12 (D) 25 (E) 30

4. Two different numbers are randomly selected from the set {−3, −1, 0, 2, 4} and then multiplied together. What is the probability that the product of the two numbers chosen is 0?

(A) 1/10 (B) 1/5 (C) 3/10 (D) 2/5 (E) 1/2

5. Megan and Shana race against each other with the winner of each race receiving x gold coins and the loser receiving y gold coins. (There are no ties and x and y are integers with $x > y > 0$.) After several races, Megan has 42 coins and Shana has 35 coins. Shana has won exactly 2 races. The value of x is

(A) 3 (B) 7 (C) 5 (D) 6 (E) 4

Word Problems

Either type your solutions or insert images of handwritten solutions. Be sure to show your work!

1. If $a + b = 9 - c$ and $a + b = 5 + c$, what is the value of c?

2. A die is a cube with its faces numbered 1 through 6. One red die and one blue die are rolled. The sum of the numbers on the top face of each die is determined. What is the probability that this sum is a perfect square?

3.

a) Expand and simplify fully the expression $(a - 1)(6a^2 - a - 1)$.
b) Determine all values of θ with $6\cos^3\theta - 7\cos^2\theta + 1 = 0$ and $-180^\circ < \theta < 180^\circ$. Round each answer to 1 decimal place where appropriate. (Note that $\cos^3\theta = (\cos\theta)^3$.)
c) Determine all values of θ with $6\cos^3\theta - 7\cos^2\theta + 1 < 0$ and $-180^\circ < \theta < 180^\circ$.

Survey

Your responses will not affect your likelihood of being counted for attendance. This is simply to let us execs know how we can improve. :)

1. Approximately how much time did you spend on this problem set?

(A) Less than 15 mins
(B) 15 to 30 mins
(C) 30 mins to 1 hour
(D) 1 to 2 hours
(E) Over 2 hours

2. How difficult did you find this problem set?

(A) Too easy
(B) Fairly easy
(C) Neutral
(D) Fairly difficult
(E) Too difficult

Thank you for your feedback!