

Assignment -1 in \LaTeX

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EE22BTECH11211

Problem 10.13.3.21:

Two dice are thrown together. Find the probability that the product of the numbers on the top of the dice is

- 1) 6
- 2) 12
- 3) 7

Solution:

x = Outcome of the first dice

y = Outcome of the second dice

The probability of each combination of die rolls is $\frac{1}{36}$

- 1) Product = 6

$xy = 6$ for $(x, y) = \{(1, 6), (2, 3), (3, 2), (6, 1)\}$

No. of events for product to be 6 = 4

$$\Pr(xy = 6) = 4 \times \frac{1}{36} = \frac{1}{9} \quad (1)$$

- 2) Product = 12

$xy = 12$ for $(x, y) = \{(2, 6), (3, 4), (4, 3), (6, 2)\}$

No. of events for product to be 12 = 4

$$\Pr(xy = 12) = 4 \times \frac{1}{36} = \frac{1}{9} \quad (2)$$

- 3) Product = 7

$xy = 7$ for $(x, y) = \{\}$

$$\Pr(xy = 7) = 0 \quad (3)$$