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:
1.
x = Outcome of the first dice
y = Outcome of the second dice
$Pr(\text{product} = 6) = Pr(x1 \cdot x2 = 6) = Pr(\{x1 = 1, x2 = 6\}, \{x1 = 2, x2 = 3\}, \{x1 = 3, x2 = 2\}, \{x1 = 6, x2 = 1\})$
$Pr(\text{product} = 6 = \Pr(x1 \cdot x2 = 6) = \Pr(x1 = 1, x2 = 6) + \Pr(x1 = 2, x2 = 3) + \Pr(x1 = 3, x2 = 2) + \Pr(x1 = 6, x2 = 1)$
$\Pr(\text{product} = 6) = (\frac{1}{6} \cdot \frac{1}{6}) + (\frac{1}{6} \cdot \frac{1}{6}) + (\frac{1}{6} \cdot \frac{1}{6}) + (\frac{1}{6} \cdot \frac{1}{6}) = 4 \cdot (\frac{1}{6} \cdot \frac{1}{6}) = \frac{1}{9}$
2.
x = Outcome of the first dice
y = Outcome of the second dice
$Pr(\text{product} = 12) = Pr(x1 \cdot x2 = 12) = Pr(\{x1 = 2, x2 = 6\}, \{x1 = 3, x2 = 4\}, \{x1 = 4, x2 = 3\}, \{x1 = 6, x2 = 2\})$
$Pr(\text{product} = 12) = \Pr(x1 \cdot x2 = 12) = \Pr(x1 = 2, x2 = 6) + \Pr(x1 = 3, x2 = 4) + \Pr(x1 = 4, x2 = 3) + \Pr(x1 = 6, x2 = 2)$
$\Pr(\text{product} = 12) = (\frac{1}{6} \cdot \frac{1}{6}) + (\frac{1}{6} \cdot \frac{1}{6}) + (\frac{1}{6} \cdot \frac{1}{6}) + (\frac{1}{6} \cdot \frac{1}{6}) = 4 \cdot (\frac{1}{6} \cdot \frac{1}{6}) = \frac{1}{9}$
3.
x = Outcome of the first dice
y = Outcome of the second dice
$\Pr(\text{product} = 7) = \Pr(x1 \cdot x2 = 7) = 0$