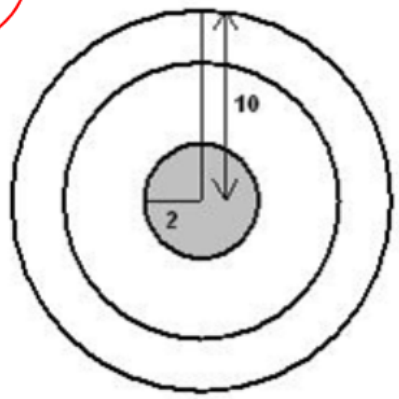
11



$A_{big} = \pi(10)^2 = 100\pi$

$A_{small} = \pi(2)^2 = 4\pi$

$\frac{4\pi}{100\pi} = \frac{4}{100} = .04 = 4\% = \frac{1}{25}$

18

$.96 = 96\% = \frac{24}{25}$

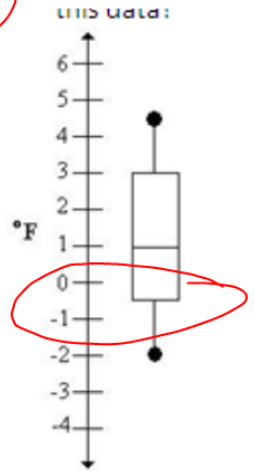
13. A weather forecast says that the chance of rain tomorrow is 20%. Write the probability that it will not rain tomorrow as a fraction in lowest terms.

$80\% = .8 =$

$\frac{80}{100} = \frac{8}{10} = \frac{4}{5}$

26

this data:



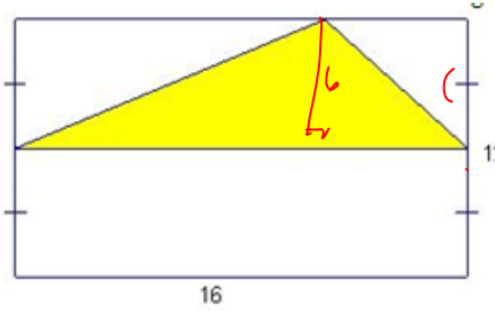
min 1st med 3rd max

9

. Ricardo rolls a six-sided die seven times. He rolled a 5 the first four times. What is the theoretical probability that Ricardo will get a 5 on his next roll?

$\frac{1}{6}$

17



$A_{rect.} = 12(16) = 192$

$A_{tri.} = \frac{1}{2}bh = \frac{1}{2}(16)(6)$

$= 48$

$\frac{48}{192} = \frac{1}{4} = .25 = 25\%$

KEY CONCEPT — Fundamental Counting Principle

Words If event M can occur in m ways and is followed by event N that can occur in n ways, then event M followed by event N can occur in $m \cdot n$ ways.

Example If event M can occur in 2 ways and event N can occur in 3 ways, then M followed by N can occur in $2 \cdot 3$ or 6 ways.

This rule can be extended to any number of events.

KEY CONCEPT — Probability of Two Independent Events

If two events, A and B, are independent, then the probability of both events occurring is $P(A \text{ and } B) = P(A) \cdot P(B)$.

and

This formula can be applied to any number of independent events.

KEY CONCEPT — Probability of Mutually Exclusive Events

Words If two events, A and B, are mutually exclusive, then the probability that A or B occurs is the sum of their probabilities.

Symbols $P(A \text{ or } B) = P(A) + P(B)$

OR

probability of drawing a 2 or an ace? Since a card cannot be both a 2 *and* an ace, these are called **mutually exclusive events**. That is, the two events cannot occur at the same time. The probability of drawing a 2 or an ace is found by adding their individual probabilities.

1. How many 6-letter codes can be formed using the letters U, V, W, X, Y, and Z, allowing repetition?

$6 \cdot 6 \cdot 6 \cdot 6 \cdot 6 \cdot 6$

$6^6 = 46,656$

2. How many seven-digit telephone numbers can be made using the digits 0-9, without repetition?

$10 \cdot 9 \cdot 8 \cdot 7 \cdot 6 \cdot 5 \cdot 4$

$604,800$

10-digit #

$10 \cdot 9 \cdot 8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1 = 10!$ factorial

3. Brian is playing a game with his friends. When you roll doubles (both six-sided dice land on the same number) you get another turn. In order to win the game, you must roll doubles 5 times in a row. What is the probability that Brian will be able to do this and win? Remember, there are 36 possible outcomes when you roll two dice.

$\frac{6}{36}$ 1st 2nd

$\frac{1}{6} \cdot \frac{1}{6} \cdot \frac{1}{6} \cdot \frac{1}{6} \cdot \frac{1}{6} = \frac{1}{7776}$