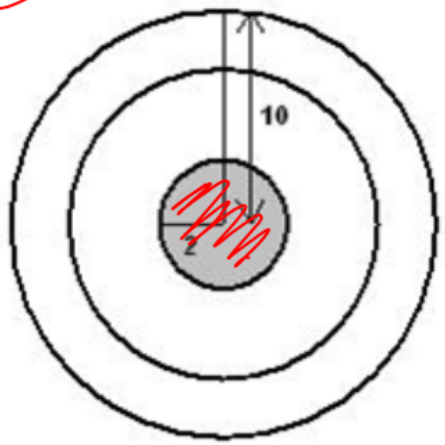
1. Groups of students at both Weston High School and Thompson High School have taken an algebra test. The school with the highest percentage of scores above 79 will be receiving scholarship money for its students. For every score above 79, the winning school will receive $10,000. Using the stem and leaf display of scores, how much money will the winning school receive?

Weston HS		Thompson HS
5 3 0 0	6	8 5 6 2 9
9 9 2 0	7	4 6 3 5 5 5 9
9 9 4 8 2 1	8	6 2 1 1 3 9
3 5 7 9 9 0	9	3 6 9 9
12		10

11



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

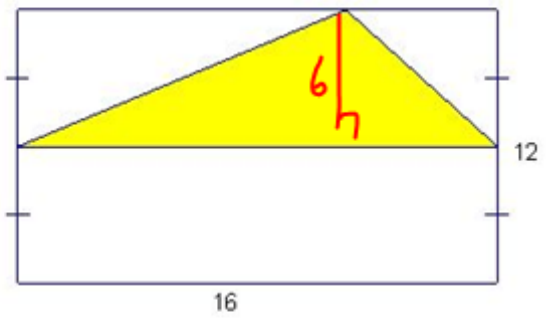
$A_{small} = \pi(2)^2 = 4\pi$

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

18

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

17



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

$$A_{tri.} = \frac{1}{2}bh = \frac{1}{2}(16)(6) = 48$$

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

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?

1st 2nd

$6 \times 6 \times 6 \times 6 \times 6 \times 6$

$6^6 = 46,656$

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

10

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

604,800

10! factorial

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

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.

$\frac{6}{36}$

$$\boxed{\frac{1}{6} \times \frac{1}{6} \times \frac{1}{6}} \times \frac{1}{6} \times \frac{1}{6} = \frac{1}{7776}$$

4. Marietta has a nail gun that malfunctions 22% of the time. If she uses the nail gun 70 times in the next 2 weeks, how many times can she expect it to malfunction? Round your answer to the nearest whole number.

$.22 \times 70 = 15.4$

15

5. The probability of seeing a whale during January, February, or March while on a boat trip in Baja, Mexico is 0.891. Of the 450 boat trips that will sail during January, February, or March, how many are NOT expected to see a whale? Round your answer to the nearest whole number.

$450 \times .891 = 400.95$

$450 - 401 = 49$

$1 - .891 = .109$

$.109 \times 450 = 49.05$

49