

1. Compute each of the following.

(a) $\binom{6}{0} - \binom{6}{1} + \binom{6}{2} - \binom{6}{3} + \binom{6}{4} - \binom{6}{5} + \binom{6}{6} =$

(b) $\binom{6}{0} + \binom{6}{1} + \binom{6}{2} + \binom{6}{3} + \binom{6}{4} + \binom{6}{5} + \binom{6}{6} =$

2. We throw a die twice. How many outcomes are possible where the sum of the two numbers rolled is 4 or more?

3. There are 24 people in the room.

(a) If everyone shakes hands with everyone else, how many handshakes took place?

(b) How many different 3-person committee can be elected in the room?

(c) If there is a competition, how many different outcomes are possible for the first, second, and third place?

4. We pull 4 cards from a standard deck of 52.

(a) How many different ways are there to end up with three red cards and a black card?

(b) How many different ways are there to end up with three kings and an ace?

5. We toss a coin eight times.

(a) How many different outcome is possible?

(b) How many outcomes are there where we get no tails and eight heads?

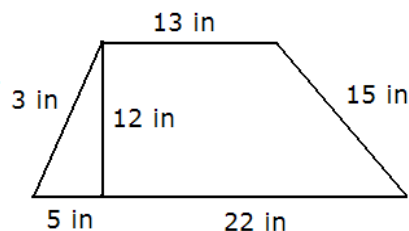
(c) How many outcomes are there where we get one tails and seven heads?

(d) How many outcomes are there where we get two tails and six heads?

(e) How many outcomes are there where we get three tails and five heads?

(f) How many outcomes are there where we get four tails and four heads?

6. Consider the trapezoid shown on the picture below.



(a) Find the perimeter of the trapezoid. Include units in your computation and answer.

(b) Find the area of the trapezoid. Include units in your computation and answer.

7. Consider a circle with radius 3 ft long.

(a) Find the circumference of the circle. Include units in your computation and answer.

- (b) Find the area of the circle. Include units in your computation and answer.
8. The price of a product has increased from \$ 120 to \$ 138. What percent of an increase is this?
9. The population of a town has increased by 19%. Now there are 69 020 people living in the town. What was the population before the increase?
10. We have borrowed \$ 2000 for two years, with a simple annual interest rate of 6%. After one year, we make a partial payment of \$ 800. After an additional six months, we make another partial payment of \$ 500. How much money do we need to pay at the end of the two years?