

1. How long will it take \$5000 to grow to \$12,000 in an account that earns 7.3% interest compounded daily?
2. At what interest rate will it take \$3000 to grow to \$24,000 in an account that earns interest compounded monthly for 20 years?
3. How much money should you deposit into an account earning 6% interest compounded quarterly, so that you will have \$1500 in three years?
4. Use the annuity formula to find S if $PMT = \$200$, $t = 3$ years, and the interest rate is 8.4% compounded monthly.
5. Joe wants to create an annuity that will ensure a comfortable retirement. He estimates that he will need \$500,000 to meet his retirement plans. How much must Joe deposit each month for 32 years into an account earning 7.65% to meet his goal?
6. Bill and Judy are buying a seaside cottage in Bolinas. The mortgage will be \$109,000, to be repaid monthly in 15 years. Find the monthly payments if the interest rate is 10.5%, compounded monthly.

- In $\triangle ABC$, $a=9$, $b=14$, $B=95^\circ$.
Find c .
- In $\triangle ABC$, $A=75^\circ$, $a=2.5$, $b=16.5$.
Find c .
- The Washington Monument is 555 feet high. If you stand one quarter of a mile from the base and look to the top, find the angle of elevation to the nearest degree.
- A helicopter is flying at 800 feet. A car is sighted at an angle of depression of 72° .
Find the distance of the car to the helicopter.
- A hot-air balloon is rising vertically. From a point on the ground 125 feet from a point directly below the balloon, the angle of elevation to the balloon changes from 19.2° to 31.7° . How far does the balloon rise during this period?
- Two cars leave a city at the same time and travel along roads that differ in direction by 80° . One car averages 60 mph and the other averages 50 mph. How far apart are they after 30 minutes?

7. A triangle has two angles that are 55° and 46° . The side opposite the 55° angle is 460 feet long. Find the lengths of the other two sides.

8. Lighthouse B is 7 miles west of Lighthouse A. A boat leaves A and sails 5 miles. At this time, it is sighted from B. If the bearing of the boat from B is $N62^\circ E$, how far from B is the boat?

9. A plane leaves South Bend for Buffalo, 400 miles away, intending to fly a straight course in the direction of $N70^\circ E$. After flying 180 miles, the pilot realizes an error has been made and that he has actually been flying in the direction of $N55^\circ E$.

a) At that time, how far is the plane from Buffalo?

b) What bearing should the plane now follow to reach Buffalo?

1. The perimeter of a square is 36. What is the exact length of the diagonal?
2. What is the exact length of a side of an equilateral triangle whose altitude is 18?

For each angle, sketch in standard form and find a coterminal angle.

3. 120°

4. $\frac{11\pi}{6}$

5. $-\frac{7\pi}{4}$

6. Find the complement and supplement of $\frac{\pi}{3}$.

Convert to radians. Give answer in terms of pi.

7. 15°

8. 125°

Convert to degrees.

9. $-\frac{7\pi}{12}$

10. $\frac{11\pi}{6}$

Find the exact value of each of the following:

11. $\sin 120^\circ$

12. $\cos \frac{7\pi}{6}$

13. $\tan \frac{\pi}{3}$

14. Convert to DMS form: 345.12°

Given the quadrant and a trig value, find the value of the indicated function.

15. Quadrant II, $\cos \theta = -\frac{\sqrt{3}}{2}$, find $\tan \theta$

16. Quadrant III, $\sin \theta = -\frac{\sqrt{2}}{2}$, find $\sec \theta$

17. If the angle is in quadrant II and $\sin \theta = .4$, find the exact value of $\sec \theta$.

1. A person can purchase a particular model of car with a choice of 10 colors, with or without automatic transmission, with or without 4-wheel drive, with or without air-conditioning, and with 2, 3, or 4 speakers. How many different options are there for this model of car?
2. In how many ways can 7 airplanes line up for a departure on a runway if the plane with the greatest number of passengers must depart first?
3. From ten books you've recently bought but not read, you plan to take four with you on vacation. How many different sets of four books can you take?
4. A student is randomly selected from a group of 12 freshmen, 16 sophomores, 20 juniors, and 2 seniors.
 - a) What is the probability of selecting a freshman?
 - b) a junior or senior?
5. Seven movies (A, B, C, D, E, F, and G) are being scheduled for viewing. The order of showing is determined by random selection. Find the probability movie C will be shown first, movie A next-to-last, and movie E last.
6. A spinner is evenly divided into 8 sections with 2 each red, yellow, blue, and green. What is the probability if the spinner is spun twice that it lands on red first, then blue?
7. A region is prone to flooding once every 20 years. The probability of flooding in any one year is $\frac{1}{20}$. What is the probability of flooding for three consecutive years?
8. A group consists of 10 male freshmen, 15 female freshmen, 20 male sophomores, and 5 female sophomores. What is the probability of selecting a freshman or a female?

9. A quiz has 4 multiple choice questions with four choices (a, b, c, or d) for each question. If a person guesses every question, what is the probability of getting them all right?

10. The odds against a candidate winning an election are given at 1 to 4.

a) What are the odds in favor of the candidate winning?

b) What is the probability the candidate will win the election?

11. Class data:

	Brown eyes	Blue eyes	Green eyes
Male	22	18	10
Female	18	20	12

a) What is the probability a student has brown eyes?

b) What is the probability a student has brown eyes given the student is male?

c) What is the probability a student is female, given that the student has blue eyes?

12. If you are dealt 3 cards from a shuffled deck of red cards, find the probability of getting exactly 2 face cards.

13. A deck of UNO cards is made up of 108 cards (25 each are red, yellow, blue, and green and 8 are wild cards). Each player is randomly dealt a seven-card hand. What is the probability that a hand will have 2 wild cards, 2 red cards, and 3 blue cards?

14. For many years, organized crime ran a numbers game that is now run legally by many state governments. The player selects a three-digit number from 000 to 999. A bet of \$1 is placed on a number, say 115. If the number is selected, the player wins \$500. Find the expected value for this game.

1. The following table shows summary statistics for Verbal SAT scores for a high school graduating class.

	n	Mean	Median	SD	Min	Max	Q1	Q3
Male	80	590	600	97.2	310	800	515	650
Female	82	602	625	102.0	360	770	530	680

Create parallel boxplots comparing the scores of boys and girls. Calculate the cutoff values for outliers.

2. Suppose your teacher reports test scores as z-scores, and you got a score of 2.2. Explain what that means.

3. The mean height of women in the U.S. is 64 inches with a standard deviation of 2.5 inches. Explain what the standard deviation represents.

4. A forester measured 27 of the trees in a large woods that is up for sale. He found a mean diameter of 10.4 inches and a standard deviation of 4.7 inches. Suppose these measures follow a Normal distribution.

- Draw and label a Normal curve.
- What size would you expect the central 95% of all trees to be?
- About what percent of trees should be less than an inch in diameter?
- What diameter of trees would be in the top 5%?

5. Make stem and leaf plot of the following data. Write a few sentences describing the distribution. Is there an official outlier?

Weights (in pounds) of dogs at a kennel: 10, 21, 37, 41, 12, 106, 45, 65, 45, 50, 57, 27, 38, 24

6. Average home attendance and number of home wins for the 2009-10 NBA Pacific Division teams were as follows:

	Lakers	Suns	Clippers	Warriors	Kings
Avg. Attendance	18,997	17,648	16,343	18,027	13,254
Home Wins	34	32	21	18	18

a) Does a winning team bring out the fans? Can average attendance be predicted from number of wins? Find the equation of the least squares regression line.

b) Interpret the slope in this context.

c) Predict the average attendance for a team with 25 home wins.

d) Predict the number of home wins which will bring out an average of at least 17,000 fans.

e.) What is the residual for the Lakers average attendance?