

1. a) Find 32% of 4000.  
b) 36 is what fraction of 90?  
c)  $\frac{3}{5}$  of a number is 72. Find this number.
2. We placed \$5000 in a bank account with an annual simple interest rate of 8%. How much money is there in the account  
a) after one year      b) after ten years      c) after fifty years?
3. Sally got a 6% raise. Now she is making \$1802 per month. How much was she making before the raise?
4. Given that  $A = \{1, 2, 3, 4, 5\}$ ,  $A \cup B = \{1, 2, 3, 4, 5, 6, 7, 8\}$  and  $A \cap B = \{2, 4\}$ .  
a) List the numbers between 1 and 8 that the set  $B$  must contain. Explain why these must be contained by  $B$ .  
b) List the numbers between 1 and 8 that the set  $B$  must not contain. Explain your answer.
5. Let  $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$ ,  $A = \{2, 3, 5, 7\}$ ,  $B = \{1, 4, 7, 10\}$ , and  $C = \{1, 3, 4, 7, 8, 9, 10\}$ . Find each of the following.  
a)  $A \cup (\overline{B \cap C})$       c)  $(A \cap \overline{C}) \cup (B \cap \overline{C})$   
b)  $A \cap \overline{B \cap \overline{C}}$       d)  $\overline{B \cap \overline{A}}$   
e) In how many different orders can we list the elements of  $B$ ?
6. True or false?  
a) If  $X \subseteq Y$ , then  $X \cup Y = X$ .      d)  $X \subseteq X \cap Y$   
b) If  $X \subseteq Y$ , then  $X \cap Y = X$ .      e) Every rectangle is a parallelogram.  
c)  $X \cup \overline{X} = U$       f) Every rectangle is a trapezoid.
7. We asked 30 students about their soda preferences. Among these students, 21 liked Pepsi and 22 liked Coke. 16 liked both Pepsi and Coke. How many students liked neither of these drinks?
8. We asked 250 students about the TV shows they watch. Among these students, 175 watch The Daily Show with Jon Stewart, 145 watch The Colbert Report and 123 watch BBC News. 100 watch both The Daily Show and The Colbert Report, 97 watch both The Daily Show and BBC News, and 87 watch both The Colbert Report and BBC News. 76 watch all three shows.  
a) Draw a Venn diagram depicting the data.  
b) How many students watch neither of these shows?  
c) How many students watch The Daily Show but not BBC News?  
d) How many students watch exactly two of these shows?
9. How many different four-digit numbers are there if  
a) repetition of digits is allowed.      b) repetition of digits is not allowed.
10. There are 4 students competing in the final round of a championship. At the end, the contestants will be ranked first, second, third, and fourth place. How many different outcomes are possible?
11. We throw a die twice.  
a) How many different outcomes are possible?  
b) List all outcomes where the sum of the two numbers rolled is 10.

12. We throw a coin five times in a row. (The outcomes are only head and tails, no sideways!)
- How many different outcomes are possible?
  - How many different outcomes will contain four heads and one tail?
  - How many different outcomes will contain three heads and two tails?
13. The supplement of an angle is  $5^\circ$  less than four times the angle. Find the angle.
14. Find the sum of the angles in a polygon of 13 sides.
15. Find the measure of an inner angle in a regular polygon of 18 sides.
16. The sides of a rectangle are 8 ft and 12 ft long.
- Find the perimeter of the rectangle. Include units in your computation and answer.
  - Find the area of the rectangle. Include units in your computation and answer.
17. Consider the right triangle shown on the picture below.
- Find the perimeter of the triangle. Include units in your answer.
  - Find the area of the triangle. Include units in your answer.

