

1. Express the following as percents: (a).  $\frac{3}{25} = 12\%$  (b).  $0.045 = 4.5\%$
2. Express the following as a decimal: (a).  $.34\% = .0034$  (b).  $\frac{1}{10}\% = 0.001$
3. (a). What is 110% of 350? Ans: 385 (b). 26 is 62% of what? Ans: 41.9355
4. You send out 350 invitations to company party. Only 280 people come to the party. What percent of people came to the company party? Ans: 80%
5. You buy a coat that is marked down from \$89 to \$65. What is the percent decrease in the cost of the coat? Ans: 26.97%
6. Suppose your bank offers a savings account that pays 3% interest compounded quarterly.
- (a). If you invest \$800 in this account, how much will you have after 6 years? Ans: \$957.13
- (b). How much should you invest now if you wish to have \$10,000 after 10 years? Ans: \$7416.48
7. Sean wants to buy a leather couch that is priced at \$1200. He finances the couch by paying 10% down and \$50 per month for 2 years.
- (a). What is the total installment price? Ans: \$1320 (b). What is the finance charge? Ans: \$120
8. Your credit card statement for June 1 - June 30 has the following information. June 1 Unpaid Balance: \$900; June 11 Payment: \$300. June 20 Charge: \$100. The monthly interest rate for the card is 1.2%
- (a). What is the average daily balance for this billing period? Ans: \$736.67
- (b). Calculate the interest using the average daily balance method. Ans: \$8.84
- (c). What is the new balance at the end of the month? Ans: \$708.84
9. Alison is buying a home for \$500,000. Her mortgage company requires a 20% down payment. The terms of the loan is 7% for a 15 year fixed-rate mortgage.
- (a). What is the mortgage amount? Ans: \$400,000
- (b). If she is required to pay 1 point at closing, how much does she pay for this? Ans: \$4000
- (c). Use the table to determine her monthly payment (excluding insurance, taxes, etc) Ans: \$3596.00
- (d). Complete the portion of the amortization table given below for this mortgage:

Pmt. #	Unpaid Bal.	Monthly Pmt.	Monthly Int. Rate	Int. Paid	Princ. Paid
1	400,000	3596.00	.005833	2333.33	1262.67
2	398,737	3596.00	.005833	2325.83	1270.17

10. Let  $U = \{p, q, r, s, t, u\}$ ,  $A = \{p, r, s\}$ ,  $B = \{r, s, t, u\}$ . Find each of the following:
- (a).  $A' = \{q, t, u\}$  (b).  $U' = \emptyset$  (c).  $A \cup B = \{p, r, s, t, u\}$  (d).  $(A \cap B)' \cap B = \{t, u\}$  (e).  $n(U) = 6$
11. True or False Determine whether the following statements are true or false.
- (a).  $\{1, 3, 3, 2, 1, 5\} = \{3, 1, 2, 5\}$  True (b).  $13 \in \{x | x \text{ is a natural number}\}$  False
- (c).  $\{3\} \in \{\{1\}, \{3\}, \{5\}, \{7\}, \{9\}\}$  True (d).  $0 \in \emptyset$  False

12. Determine whether each of the following are true or false:

(a).  $5 \in \{-2, -1, 0, 1, 2\}$

False

(b).  $\{a, b\} \subseteq \{a, b, c, d\}$

True

(c).  $\{a, b\} \subset \{a, b, c, d\}$

True

(d).  $\emptyset \subseteq \{-2, -1, 0, 1, 2\}$

True

(e).  $\{3, 2, 3, 2, 1\} = \{1, 2, 3\}$

True

(f).  $b \in \{a, b\} \cap \{c, d\}$

False

13. List all of the following symbols that can be placed in the blank  $\subseteq$ ,  $\subset$ , and/or  $=$  to make it a true statement. If none of them will make it true, clearly write NONE.

(a).  $\{1, 3, 3, 2, 1, 5\}$  \_\_\_\_\_  $\{1, 2, 3, 5\}$

(b).  $\{a, c, e\}$  \_\_\_\_\_  $\{a, b, c, d, e, f\}$

(c).  $\{0\}$  \_\_\_\_\_  $\emptyset$

14. Suppose a travel company commissioned a survey that asked 500 people in the Midwest the following three questions and received the indicated answers (all respondents answered either yes or no):

Have you ever been to Disney Land? Yes: 260

Have you ever been to the Alamo? Yes: 80

Have you ever been in the St. Louis Arch? Yes: 150

When publishing the results of this survey, the company notes that 190 of the respondents had not been to any of the three tourist sites. They also noted that 105 people had been to both Disney Land and the St. Louis Arch and 65 people had been to both the Alamo and the St. Louis Arch, and only 50 people had been to all three places. Use a Venn Diagram to determine how many of the people surveyed had been to two of the tourist sites, but not all three.

15. Form the negation of the following statements.

(a). The girl does not have blue eyes. The girl has blue eyes

(b). All girls have blue eyes. Some girls do not have blue eyes

(c). No boys have green eyes. Some boys have green eyes

16. Given the following statements Let the statements  $p$ ,  $q$ , and  $r$  be defined as follows:

$p$ : My dog can talk.

$q$ : My dog is my spokesperson.

$r$ : My dog does not have a job.

Write the following argument in words.

(a).  $\sim p$  My dog cannot talk

(b).  $\sim (p \vee q)$  It is not true that my dog can talk or my dog is my spokesperson.

OR My dog cannot talk and my dog is not my spokesperson.

(c).  $(p \wedge q) \rightarrow \sim r$  If my dog can talk and my dog is my spokesperson, then my dog does have a job.

Write the following in symbolic form:

(d). My dog is my spokesperson if and only if my dog can talk.

Ans:  $q \longleftrightarrow p$

17. Complete the truth table for  $\sim p \vee q$

$p$	$q$	$p \vee q$	$\sim (p \vee q)$
T	T	T	F
T	F	T	F
F	T	T	F
F	F	F	T