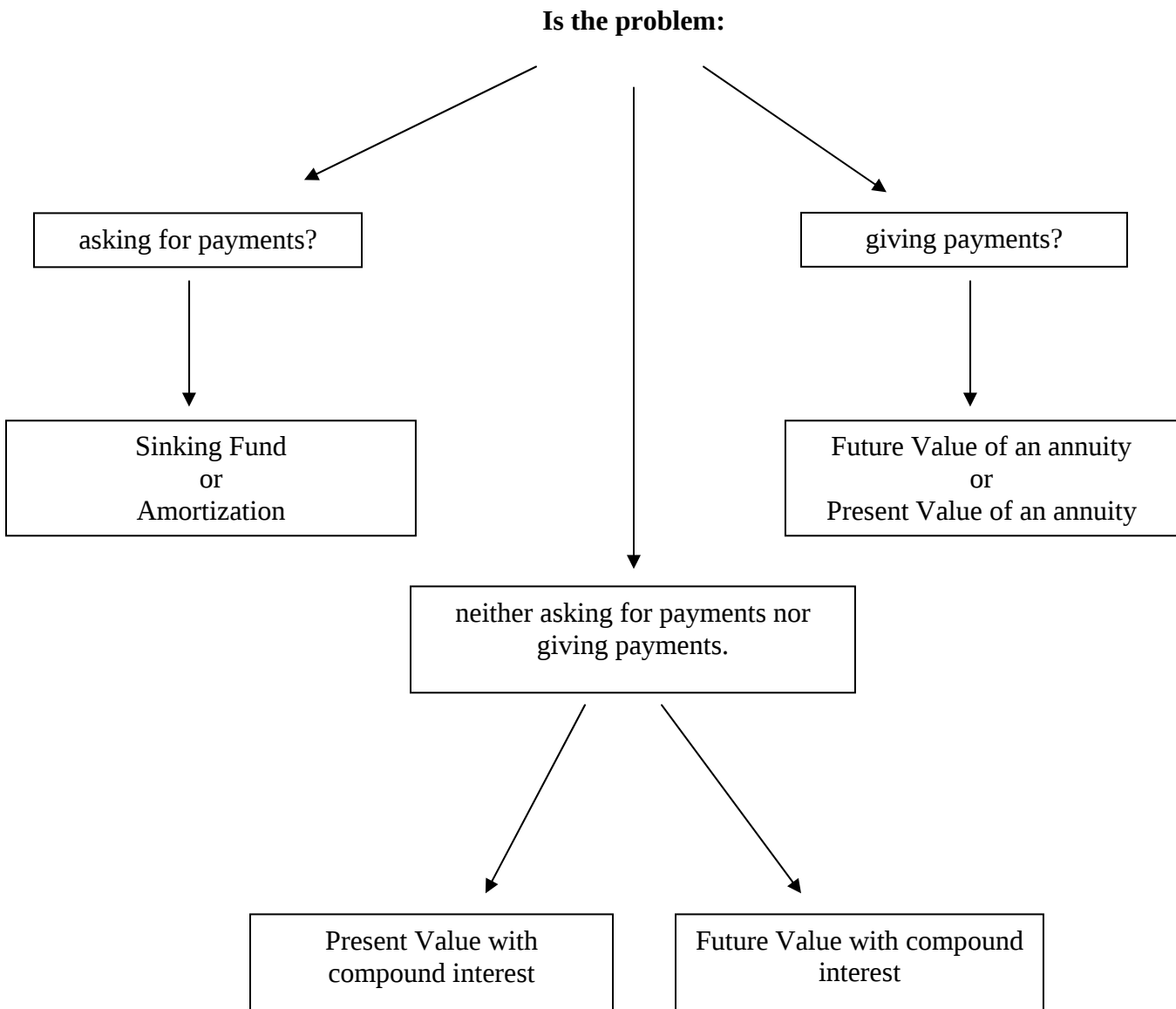


**Math 1313
Test 3 Review**

Chapter 4 Flow Chart

The following flow chart will help categorize math of finance problems with compound interest.



1. Nicholas and Olivia are buying a house for \$250,000. They made a 15% down payment. Their financing is for 30 years at 6.78% annual interest compounded monthly. Find their monthly payment.

2. Mary deposited \$5,000 in an account that earns 9% per year compounded monthly. How much will she have in 40 years, when she retires?

3. Megan bought a new car. Her car payments are \$385.17 for 6 years. Her financing rate was 8.9% annual interest compounded monthly. She made a \$1,200 down payment. What was the total purchase price of the car?

4. Anna wants to have \$5,000 saved when she graduates from college so that she will have a down payment for a new car. Her credit union pays 5% annual interest compounded monthly. How much money should she deposit each month to have the money available when she graduates in 3 years?

5. Sergio wants to have \$5,000 in the bank in 3 years to pay for an Alaskan cruise. How much cash should he deposit today, if the bank pays 4% annual interest compounded quarterly, if he wants to be sure to have the funds available in 3 years?

6. Gary decided to save some money for his daughter's college education. He decided to save \$300 per quarter. His credit union pays 4.5% per year compounded quarterly. How much money will he have available when his daughter starts college in 10 years?

7. John wishes to set up an account for his grandfather so that he can have some extra money each month. John wants his grandfather to be able to withdraw \$120 per month for the next 4 years. How much must John invest today at 4% per year compounded monthly to set up this account?

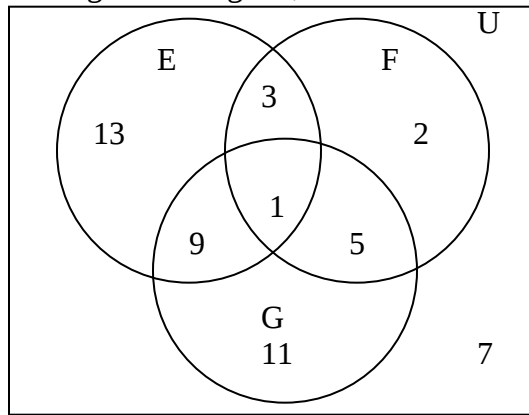
8. A group of students were surveyed. One-hundred fifty-four are enrolled in Chemistry, 49 are enrolled in Business Calculus, 38 are enrolled in both, and 26 are not enrolled in either course.

a. How many students were surveyed?

b. How many students are enrolled in exactly one of the two courses mentioned here?

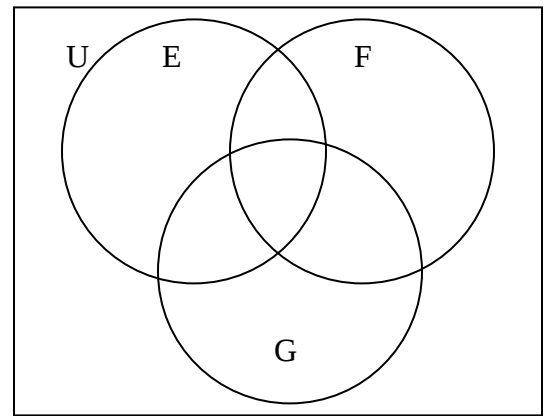
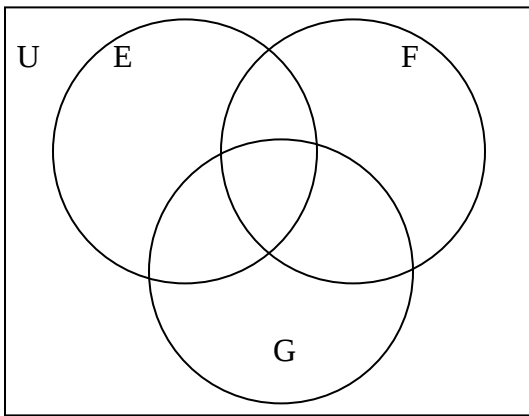
c. How many students are enrolled in Business Calculus or Chemistry?

9. Given the following Venn diagram, find:



a. $n(G^c \cap F)$

b. $n(F^c \cup (E \cap G))$



10. A license plate consists of 2 letters followed by 4 digits. How many license plates are possible if the 1st letter can't be O, and no repetition of letters or digits is allowed?

11. A restaurant offers 6 appetizers, 4 salads, 8 entrees, and 5 desserts. In how many ways can a customer select a meal consisting of an appetizer, a salad, an entrée, and a dessert?

12. In how many ways can a president, vice-president and a secretary be chosen from 22 members of a club, if one person cannot hold more than one position and all 22 members are eligible for any position?

13. A committee consists of 11 people. In how many ways can a subcommittee of 4 people be chosen?

14. A coin is tossed 20 times.

a. How many outcomes are possible?

b. In how many outcomes do 10 tails occur?

c. In how many outcomes do at least 18 tails occur?

d. In how many outcomes do at most 17 tails occur?

15. A crate of 17 apples contains 4 rotten apples. Seven apples are chosen at random from the crate.

a. How many selections contain 2 rotten and 5 good apples?

b. How many selections contain 3 rotten apples?

c. How many selections contain at least 3 rotten apples?

d. How many selections contain at least 1 rotten apple?

16. Let E and F be events of a sample space S . Let $P(E^c) = 0.69$, $P(F) = 0.36$ and $P(E \cup F)^c = 0.45$. Find:

a. Find $P(E \cup F)$

b. $P(E \cap F)^c$

c. $P(E \cap F^c)$

17. A coin is tossed 10 times.

a. Find the probability that exactly 2 heads occur.

b. Find the probability that at most 1 head occurs.

c. Find the probability that at least 3 tails occur.

18. A judge has a jury pool of 40 people that contains 22 women and 18 men. She needs a jury of 12 people.

a. What is the probability that the jury contains 6 women and 6 men?

b. What is the probability that the jury contains 8 women?

c. What is the probability that at most 10 men are on the jury?

d. What is the probability that at least 11 women are on the jury?

Formulas to be Provided on Test 3
It will be a link!

$$I = Prt$$

$$F = P(1 + rt)$$

$$E = \frac{Fi}{(1+i)^n - 1}$$

$$P = F(1+i)^{-n}$$

$$P = E \left[\frac{1 - (1+i)^{-n}}{i} \right]$$

$$E = \frac{Pi}{1 - (1+i)^{-n}}$$

$$F = P(1+i)^n$$

$$F = E \left[\frac{(1+i)^n - 1}{i} \right]$$

$$i = \frac{r}{m}$$

$$n = mt$$

$$n(A \cup B) = n(A) + n(B), \text{ if } A \cap B = \emptyset$$

$$P(E \cup F) = P(E) + P(F), \text{ if } E \cap F = \emptyset$$

$$n(A \cup B) = n(A) + n(B) - n(A \cap B), \text{ if } A \cap B \neq \emptyset$$

$$P(E \cup F) = P(E) + P(F) - P(E \cap F), \text{ if } E \cap F \neq \emptyset$$

$$(A \cup B)^c = A^c \cap B^c$$

$$(A \cap B)^c = A^c \cup B^c$$