

Math 1108 Test 1 Practice - Fall 2019

Test Name : Math 1108 Test 1 Practice

1. Determine the simple interest earned on \$10,000 after 20 years if the APR is 3%.

Answer: _____

2. A couple deposits \$17,000 into an account earning 4% annual interest for 25 years. Calculate the future value of the investment if the interest is compounded monthly. Round your answer to the nearest cent.

Answer: _____

3. Use the formula for present value of money to calculate the amount you need to invest now in one lump sum in order to have \$25,000 after 10 years with an APR of 7% compounded monthly. Round your answer to the nearest cent, if necessary.

Answer: _____

4. Arnett College predicts that in 18 years it will take \$350,000 to attend the college for four years. Hannah has a substantial amount of cash and wishes to invest a lump sum of money for her child's college fund. How much should Hannah put aside in an account with an APR of 8% compounded monthly in order to have \$350,000 in the account in 18 years? Round your answer to the nearest cent, if necessary.

Answer: _____

5. Sophia wishes to retire at age 65 with \$1,800,000 in her retirement account. When she turns 28, she decides to begin depositing money into an account with an APR of 9%. What is the monthly deposit that Sophia must make in order to reach her goal? Round your answer to the nearest cent, if necessary.

Answer: _____

6. Andrew deposits a fixed quarterly amount into an annuity account for his child's college fund. He wishes to accumulate a future value of \$90,000 in 12 years. Assuming an APR of 3.5%, how much of the \$90,000 will Andrew ultimately deposit in the account, and how much is interest earned? Round your answers to the nearest cent, if necessary.

Answer: _____

7. Suppose you want to purchase a house. Your take-home pay is \$2550 per month, and you wish to stay within the recommended guidelines for mortgage amounts by only spending $\frac{1}{4}$ of your take-home pay on a house payment. You have \$15,200 saved for a down payment and you can get an APR from your bank of 3.6%, compounded monthly. What is the total cost of a house you could afford with a 30-year mortgage? Round your answer to the nearest cent, if necessary.

Answer: _____

8. Parker has two options for buying a car. Option A is 1.2% APR financing over 48 months and Option B is 5.5% APR over 48 months with \$1700 cash back, which he would use as part of the down payment. The price of the car is \$31,075 and Parker has saved \$3100 for the down payment. Find the total amount Parker will spend on the car for each option if he plans to make monthly payments. Round your answers to the nearest cent, if necessary.

Answer: _____

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9. If $A = \{e, d, u, c, a, t, o, r\}$ and $U = \{a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z\}$, find A' .

Answer: _____

10. Determine the cardinal number of the set.

$$M = \{g \mid g \in \mathbb{N}, g \text{ is odd, and } |g| \leq 8\}$$

Answer: _____

11. Use the given sets to answer the question. Is $P = Q$? Why or why not?

$$P = \{\text{red, orange, blue, green, indigo, yellow}\}$$

$$Q = \{\text{red, yellow, blue, green, indigo, orange}\}$$

- A) Yes, because both sets contain exactly the same elements, just in a different order.
- B) Yes, because both sets have the same number of elements.
- C) No, because the sets contain different elements.
- D) No, because the sets do not have the same number of elements.

12. Use the given sets to answer the question. Is $P = Q$? Why or why not?

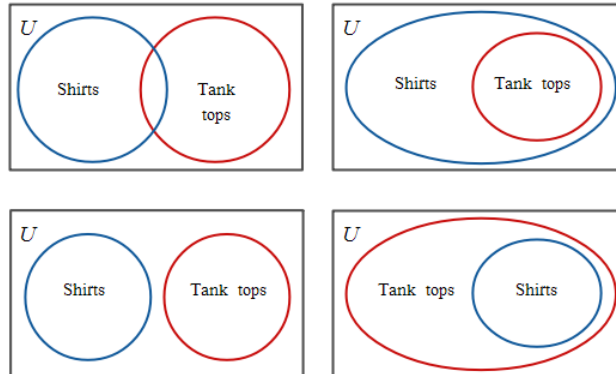
$$P = \{\text{Earth, Mars, Saturn, Jupiter, Neptune, Venus}\}$$

$$Q = \{x \mid x \text{ is a planet in the solar system}\}$$

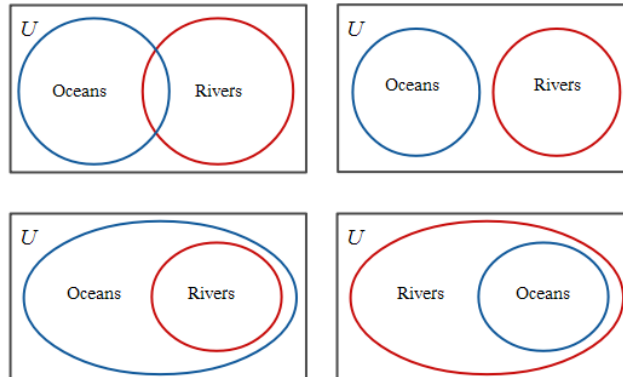
- A) Yes, because both sets contain exactly the same elements.
- B) Yes, because both sets have the same number of elements.
- C) No, because set P has more elements than set Q.
- D) No, because set P has fewer elements than set Q.

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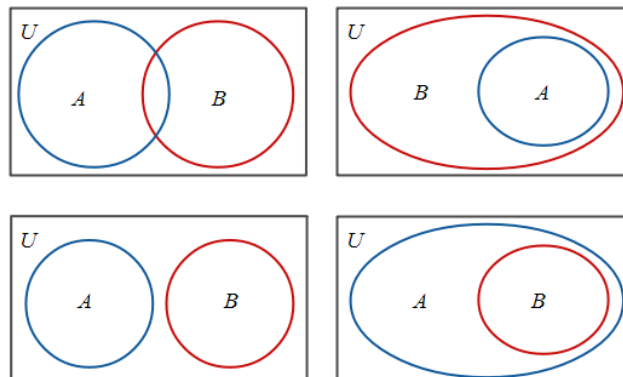
13. Let U consist of all clothes. Select the Venn diagram that represents the following two sets: shirts and tank tops.



14. Let U consist of all bodies of water. Select the Venn diagram that represents the following two sets: oceans and rivers.



15. Let $U = \{x \mid x \in \mathbb{Z}\}$, $A = \{x \mid x \text{ is an integer less than } 8\}$, and $B = \{2, 3, 4, 5, 6\}$. Select the Venn diagram that represents U , A , and B .



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16. Determine the number of proper subsets contained in R if $R = \{x|x \text{ is an odd, positive integer and } x < 12\}$.

Answer: _____

17. Determine the number of subsets contained in M if $M = \{x|x \text{ is an odd, negative integer and } x > -22\}$.

Answer: _____

18. Use the given sets to find $A \cup B$.

$$A = \{2, 3, 4, 5, 6, 7, 8, 9, 10\}$$

$$B = \{2, 4, 6, 8, 10, 12\}$$

Answer: _____

19. Use the given sets to find $A \cap B$.

$$A = \{2, 3, 4, 5, 6, 7, 8, 9\}$$

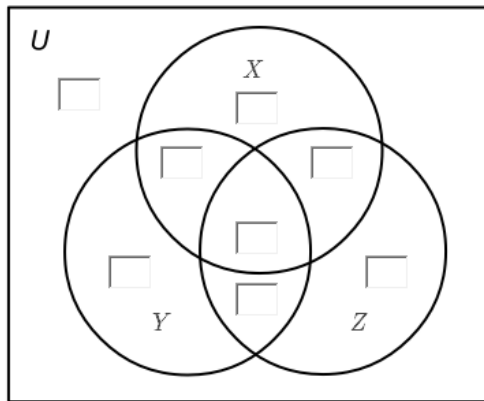
$$B = \{3, 5, 7, 9, 11, 13\}$$

Answer: _____

20. Fill out the Venn diagram using the given information.

$$|X| = 36 \quad |Y| = 36 \quad |Z| = 26 \quad |X \cap Y| = 19$$

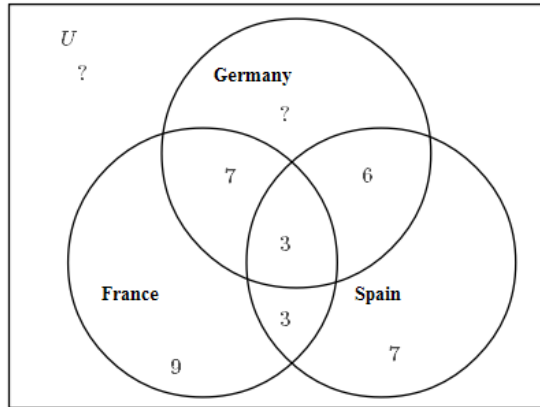
$$|X \cap Z| = 17 \quad |Y \cap Z| = 17 \quad |X \cap Y \cap Z| = 13 \quad |U| = 88$$



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21. There are 45 students in the University Travel Club. The following information and Venn diagram show how many students traveled to Germany, France, and Spain. How many students have been to France or Germany but not Spain?

20 members have visited Germany
 19 have been to Spain
 22 have visited France
 10 have been to Germany and France
 9 have only been to France
 7 have only been to Spain
 3 have been to only Spain and France
 3 have been to all three countries
 Some of the members have not been to any of the three



Answer: _____

22. A survey of recent high school graduates regarding literature that they studied during their high school career yielded the following information: 505 read *Gone with the Wind*, 615 read *Moby Dick*, 925 read *Lord of the Flies*, 133 read all three, 23 read none, 81 read only *Moby Dick*, 171 read *Moby Dick* and *Gone with the Wind*, and 201 read *Gone with the Wind* and *Lord of the Flies*, but not *Moby Dick*. What percent of the recent graduates read exactly one book? Round your answer to the nearest tenth, if necessary.

Answer: _____

23. A survey of 125 freshmen business students at a local university produced the results listed below. How many students took only music?

30 took English;
 33 took math;
 32 took music;
 14 took English but not math;
 9 took math and music;
 12 took English and music;
 3 took all three

Answer: _____

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24. Use the given sets to find $(A \cup B) \cap C$.

$$A = \{1,2,3,4,5,6,7,8\}$$

$$B = \{2,4,6,8,10,12\}$$

$$C = \{3,7,9,11,13,15\}$$

Answer: {_____}

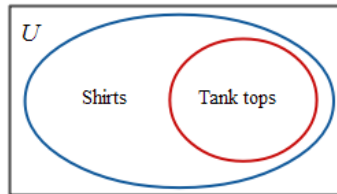
25. Walter deposits a fixed monthly amount into an annuity account for his child's college fund. He wishes to accumulate a future value of \$95,000 in 14 years. Assuming an APR of 3.8%, how much of the \$95,000 will Walter ultimately deposit in the account, and how much is interest earned? Round your answers to the nearest cent, if necessary.

Answer: _____

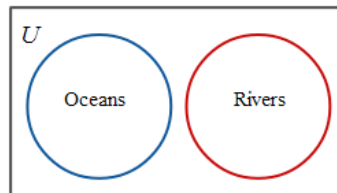
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Test Name : Math 1108 Test 1 Practice v2 -(Answer Key)

1. Correct Answer: \$6000
2. Correct Answer: \$46,134.01
3. Correct Answer: \$12,439.91
4. Correct Answer: \$83,321.94
5. Correct Answer: \$507.65
6. Correct Answer: \$72,806.40; \$17,193.60
7. Correct Answer: \$155,419.18
8. Correct Answer: Option A: \$31,765.60; Option B: \$32,430.88
9. Correct Answer: $A' = \{b, f, g, h, i, j, k, l, m, n, p, q, s, v, w, x, y, z\}$
10. Correct Answer: $|M| = 4$
11. Correct Answer: Yes, because both sets contain exactly the same elements, just in a different order.
12. Correct Answer: No, because set P has fewer elements than set Q .
13. Correct Answer:

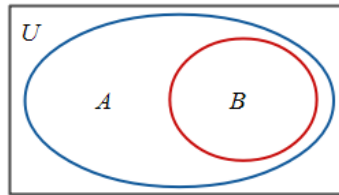


14. Correct Answer:

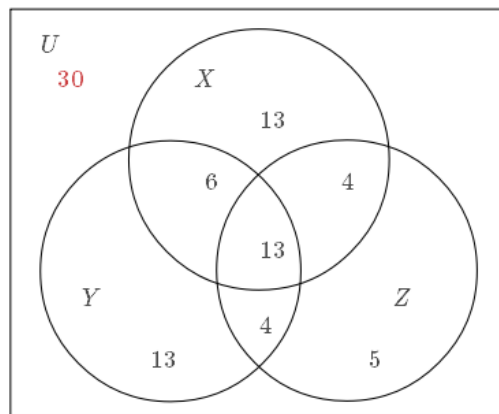


15. Correct Answer:

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16. Correct Answer: 63
17. Correct Answer: 2048
18. Correct Answer: $A \cup B = \{2, 3, 4, 5, 6, 7, 8, 9, 10, 12\}$
19. Correct Answer: $A \cap B = \{3, 5, 7, 9\}$
20. Correct Answer:



21. Correct Answer: 20
22. Correct Answer: 36.8%
23. Correct Answer: 14
24. Correct Answer: $\{3, 7\}$
25. Correct Answer: \$72,107.28; \$22,892.72