Set Theory Practice Problems

$$A = \{\, x \mid x \in W, -2 \leq x \leq 6 \}$$
$$B = \{\, x \mid x \in Z, -4 < x < 1 \}$$
$$C = \{\, x \mid x \in N, x \leq 4 \}$$

1.) $A' =$

2.) $B' =$

3.) $C' =$

4.) $A \cap B =$
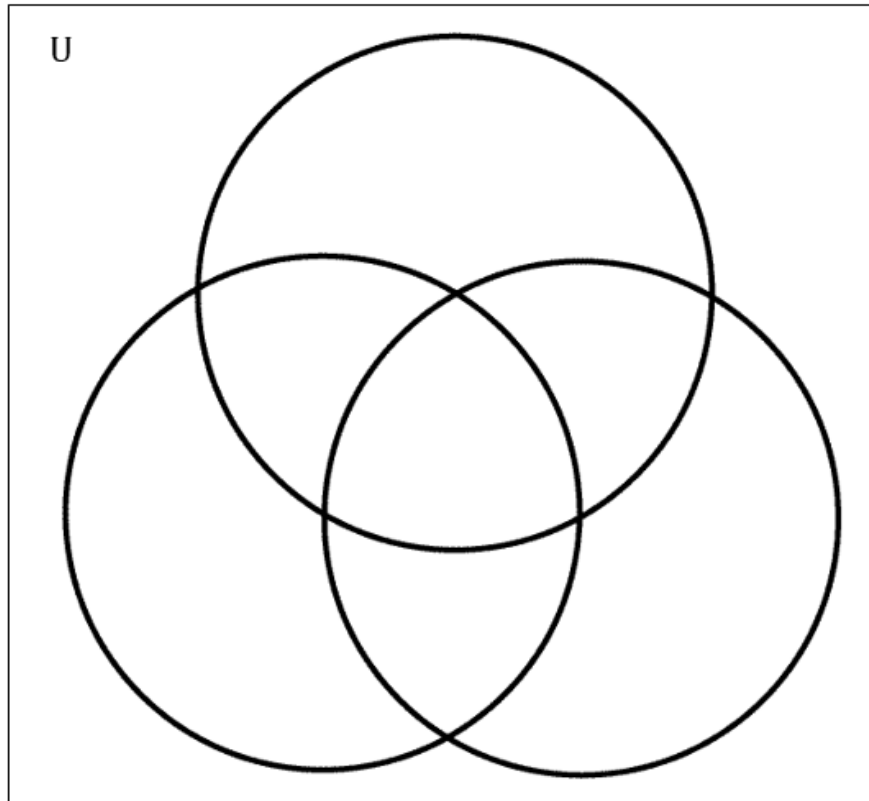
5.) $A \cap C =$

6.) $B \cup C =$

7.) $C' \cap (A \cup B) =$

8.) $B \cap C =$

U

9.) $(A \cup C) \cap (A \cap B)' =$

10.) $(A \cup C)' \cap (B \cup C)'$

Set Theory Practice Answers

1.) {-3, -2, -1}   OR   [-3, -1]

2.) {1, 2, 3, 4, 5, 6, 7, 8}   OR   [1, 8]

3.) {-3, -2, -1, 0, 5, 6}

4.) {0}

5.) {1, 2, 3, 4}   OR   [1, 4]

6.) {-3, -2, -1, 0, 1, 2, 3, 4}   OR   [-3, 4]

7.) {-3, -2, -1, 0, 5, 6}

8.) { }   (the empty set)

9.) {1, 2, 3, 4, 5, 6}   OR   [1, 6]

10.)   {-3, -2, -1, 5, 6}

Solving Equations Practice Problems

Solve each equation for the variable.

1.) $5(3 - 2y) + 4y = 3$

2.) $3(n - 7) + 4 = -11$

3.) $3m + 22 - 7m = 2$

4.) $\frac{2}{5}x - 5 = -13$

5.) $9 - 5x = 12 - 6x - 7$

6.) $\frac{3}{4}(a + 4) = 3$

7.) $9x + 2 = 3(3x - 8)$

8.) $4y + 16 = 2y - 14$

9.) $\frac{2}{5}(3x + 2) = 4$

10.) $\quad 2(y - 4) + 8 = \frac{1}{2}(6y + 20)$

Solving Equations Practice Answers

1.) 2

2.) 2

3.) 5

4.) −20

5.) −4

6.) 0

7.) ∅

8.) −15

9.) $2\frac{2}{3}$

10.) −10

Simplifying Expressions Practice Problems

1.) $(6 - 5)^2 + 14 \div (2 + 5)$

2.) $3^2 + 16 \div 4$

3.) $8 \cdot 4 + 2^2 \div 2$

4.) $2 + (3^2 - 4) \cdot 6 \div 3$

5.) $15 \div (7 - 2) - 1 + 8$

6.) $9 \div 3 + 2 \cdot 7$

7.) $-5x^2 - 2x$ when $x = -2$

8.) $2x^2 \div (4 - 2x) + 2$ when $x = 3$

9.) $\frac{1}{2}(8 - x^2) \cdot 3 + (x + 5)$ when $x = 2$

10.) $2(x + 4) + 3x$ when $x = -4$

1.) 3

2.) 13

3.) 34

4.) 12

5.) 10

6.) 17

7.) -16

8.) -7

9.) 13

10.) -12

Solving Proportions Practice Problems

Solve each proportion.

1.) $\dfrac{x}{30} = \dfrac{3}{5}$

2.) $\dfrac{4}{x+3} = \dfrac{2}{x}$

3.) $\dfrac{2}{a+6} = \dfrac{4}{a-4}$

4.) $\dfrac{6}{x-6} = \dfrac{2}{x}$

5.) $\dfrac{3}{k} = \dfrac{-3}{4k-1}$

6.) $\dfrac{2}{2x+2} = \dfrac{3}{2x+4}$

7.) $\dfrac{3}{m-6} = \dfrac{6}{m}$

8.) $\dfrac{k}{k-4} = \dfrac{5}{3}$

9.) $\dfrac{6}{4} = \dfrac{x}{x+4}$

10.) $\dfrac{n+3}{3} = \dfrac{n}{6}$

Solving Proportions Practice Answers

1.) 18

2.) 3

3.) -16

4.) -3

5.) 5

6.) 1

7.) 12

8.) 10

9.) -12

10.)   -6

Writing Ratios Based on Descriptions Practice Problems

Write each in simplest form. Simplify if possible.

1.) Write a ratio of wins to losses for a football team that played 36 games and won 14.

2.) Write a ratio of men to women in a wedding club with 43 members, 17 of which were men.

3.) Write a ratio of adults to children in a hotel with 112 occupants, 46 of which are children.

4.) Write a ratio of students to staff in a school with 500 occupants, 55 of which are staff members.

5.) Write a ratio of freshmen to sophomores if there is a total of 160, 92 of which are freshmen.

6.) Write a ratio of "pop" to "soda" if there are 26 people, 12 of them say "pop," while the rest say "soda."

7.) Write a ratio of fiction to non-fiction books in a mini library that has 82 books, 48 of which are non-fiction.

8.) Write a ratio of juniors to seniors if there are 103 total, 63 of which are seniors.

9.) Write a ratio of apples to oranges, if a basket containing both has a total of 18, 3 of which are apples.

10.)   Write a ratio of men to women in a theatre with 56 people, 28 of which are women.

1.) 7 : 11

2.) 17 : 26

3.) 33 : 23

4.) 89 : 11

5.) 23 : 17

6.) 6 : 7

7.) 17 : 24

8.) 40 : 63

9.) 1 : 5

10.)   1 : 1

Solving Word Problems With Decimals Practice Problems

1.) What is 4% of 25?

2.) What is 15% of 80?

3.) What is 30% of 180?

4.) 84 is 35% of what number?

5.) 57 is 60% of what number?

6.) 323 is 95% of what number?

7.) 12 is 10% of what number?

8.) What percent of 160 is 12?

9.) What percent of 100 is 15?

10.)   What percent of 200 is 35?

Solving Word Problems With Decimals Practice Answers

1.) 1

2.) 12

3.) 54

4.) 240

5.) 95

6.) 340

7.) 120

8.) 7.5%

9.) 15%

10.)   17.5%