SET THEORY

A DEFINITIONS

A.1 LISTING THE ELEMENTS

MCQ 1: List the elements of the set A, which includes all objects shown in this figure:

Choose one answer:

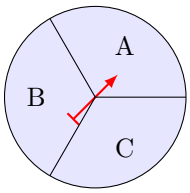
- ☐ $A =$ die, coin, duck
- ☐ $A = \{$duck, coin$\}$
- ☐ $A = \{$die, duck, coin$\}$

MCQ 2: List the elements of the set A, which includes all objects in this figure:

Choose one answer:

- ☐ $A =$ apple, cherry, lemon, orange
- ☐ $A = \{$apple, cherry$\}$
- ☐ $A = \{$apple, cherry, lemon, orange$\}$
- ☐ $A = \{$apple, cherry, lemon, orange, apple$\}$

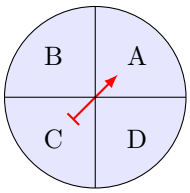
MCQ 3: List the elements of the set A, which includes all possible results the spinner can land on:



Choose one answer:

- ☐ $A = \{A, B, C\}$
- ☐ $A = \{A, B\}$
- ☐ $A = \{A, C\}$

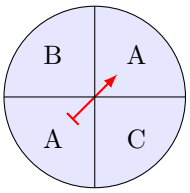
MCQ 4: List the elements of the set A, which includes all possible results the spinner can land on:



Choose two correct answers:

- ☐ $A = \{A, B, C, D\}$
- ☐ $A = \{A, B, C\}$
- ☐ $A = \{A, B\}$
- ☐ $A = \{D, B, C, A\}$

MCQ 5: List the elements of the set A, which includes all possible results the spinner can land on:



Choose one answer:

- ☐ $A = \{A, B, A, C\}$
- ☐ $A = \{A, B\}$
- ☐ $A = \{A, C\}$
- ☐ $A = \{A, B, C\}$

MCQ 6: Let A be the set of all possible combinations of two children in a family, where B means boy and G means girl (e.g., BG is a boy then a girl). List the elements of A.

Choose one answer:

- ☐ $A = \{BB, BG, GB, GG\}$
- ☐ $A = \{BB, GG\}$
- ☐ $A = \{B, G\}$

A.2 CHECKING MEMBERSHIP

Ex 7: 2 ☐ $\in$ ☐ $\notin$ $\{1, 2, 3, 4, 5, 6\}$

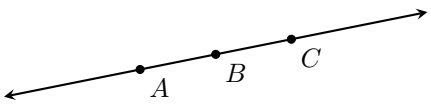
Ex 8: 7 ☐ $\in$ ☐ $\notin$ $\{1, 2, 3, 4, 5, 6\}$

Ex 9: d ☐ $\in$ ☐ $\notin$ $\{a, b, c, d\}$

Ex 10: z ☐ $\in$ ☐ $\notin$ $\{a, b, c, d\}$

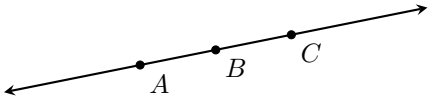
A.3 CHECKING MEMBERSHIP IN GEOMETRY

Ex 11:



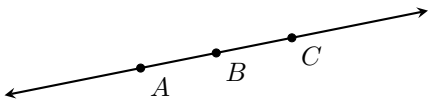
C ☐ $\in$ ☐ $\notin$ $\overleftrightarrow{AB}$

Ex 12:



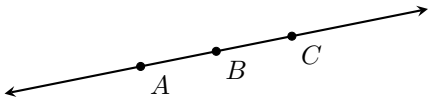
C ☐ $\in$ ☐ $\notin$ $\overline{BA}$

Ex 13:



B ☐ $\in$ ☐ $\notin$ $\overline{AC}$

Ex 14:



A ☐ $\in$ ☐ $\notin$ $\overleftrightarrow{BC}$

A.4 CHECKING SET EQUALITY

MCQ 15: Is this statement true or false?
$\{a, b, c\} = \{b, a, c\}$

Choose one answer:

☐ True

☐ False

MCQ 16: Is this statement true or false?
$\{a, b, c, d\} = \{a, b, c, d, e\}$

Choose one answer:

☐ True

☐ False

MCQ 17: Is this statement true or false?
$\{1, 2, 3\} = \{2, 1, 3\}$

Choose one answer:

☐ True

☐ False

MCQ 18: Is this statement true or false?
$\{1, 2, 3, 4\} = \{1, 2, 3, 4, 5\}$

Choose one answer:

☐ True

☐ False

B CARDINALITY

B.1 COUNTING

Ex 19: $n(\{1, 2, 3\}) =$ ☐

Ex 20: $n(\{a, b, c, d, e\}) =$ ☐

Ex 21: $n(\{\text{apple, cherry, lemon, orange}\}) =$ ☐

Ex 22: Let $A = \{\text{die, duck, coin}\}$. Find the number of elements in A.

$$n(A) = \square$$

Ex 23: Let $A = \{1, 2, 3, 4, 5\}$. Find the number of elements in A.

$$n(A) = \square$$

C COMPLEMENT

C.1 FINDING THE COMPLEMENT

MCQ 24: You are given the universe $U = \{1, 2, 3, 4, 5, 6\}$ and the set $A = \{1, 3, 5\}$. What is the complement A'?

Choose one answer:

☐ $A' = \{2, 4, 6\}$

☐ $A' = \{1, 2, 4, 6\}$

☐ $A' = \{1, 2, 3, 4, 5, 6\}$

☐ $A' = \{3, 5\}$

MCQ 25: You are given the universe $U = \{a, b, c, d, e, f\}$ and the set $B = \{a, c, e\}$. What is the complement B'?.

Choose one answer:

☐ $B' = \{a, b, d, f\}$

☐ $B' = \{a, b, c, d, e, f\}$

☐ $B' = \{c, e\}$

☐ $B' = \{b, d, f\}$

MCQ 26: You are given the universe $U = \{1, 2, 3, 4, 5, 6, 7, 8\}$ and the set $C = \{2, 4, 6, 8\}$. What is the complement C'?. Find the complement of C.

Choose one answer:

☐ $C' = \{1, 2, 3, 5, 7\}$

☐ $C' = \{1, 3, 5, 7\}$

☐ $C' = \{2, 4, 6, 8\}$

☐ $C' = \{1, 2, 3, 4, 5, 6, 7, 8\}$

MCQ 27: The universe $U = \{BB, BG, GB, GG\}$ lists all two-child family combinations (B = boy, G = girl; e.g., BG = boy then girl). The set $A = \{BB\}$ includes only families with two boys. What is A'?

Choose one answer:

☐ $A' = \{BG, GB, GG\}$

☐ $A' = \{BB, BG\}$

☐ $A' = \{BG, GB\}$

☐ $A' = \{BB, GG\}$

MCQ 28: The universe $U = \{BB, BG, GB, GG\}$ lists all two-child family combinations (B = boy, G = girl; e.g., BG = boy then girl). The set $A = \{BG, GB\}$ includes families with one boy and one girl. What is A'?

Choose one answer:

☐ $A' = \{BG, GB, GG\}$

☐ $A' = \{BB, BG\}$

☐ $A' = \{BG, GB\}$

☐ $A' = \{BB, GG\}$