

Appendix A: Session 1 Puzzles

Goal: Escape from the grid by finding the correct path to the outside ring

Rules: From the **START** position, you will make 8 moves

You can move within a ring or move closer to the outside

You can move to adjacent squares, but not diagonally

You cannot re-enter a ring to move back toward the center

| | | | | | | | | | | | | |
|----|---|----|---|-------|---|----|---|----|--|----|--|----|
| 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 |
| | I | O | I | N | R | N | R | | | | | |
| 24 | R | N | R | O | I | O | I | | | | | 8 |
| 23 | I | O | I | N | R | N | R | | | | | 9 |
| 22 | R | N | R | START | O | I | O | | | | | 10 |
| 21 | O | I | O | I | N | R | N | | | | | 11 |
| 20 | N | R | N | R | O | I | O | | | | | 12 |
| 19 | O | I | O | I | N | R | N | | | | | 13 |
| | | 18 | | 17 | | 16 | | 15 | | 14 | | |

Where did you exit the grid? Square # _____

N = Nominal variable

O = Ordinal variable

I = Interval variable

R = Ratio variable

Which level of measurement?

| | | |
|----------------------|---|--|
| 1 st move | Eye color (brown, blue, green, etc.) | |
| 2 nd move | Annual salary (in \$) | |
| 3 rd move | Olympic medal (gold, silver, bronze) | |
| 4 th move | Academic major (psychology, history, chemistry, etc.) | |
| 5 th move | IQ score (120, 90, 140, etc.) | |
| 6 th move | Distance travelled (in meters) | |
| 7 th move | Level of education (high school, bachelor's, master's, etc.) | |
| 8 th move | Favorite music genre (pop, country, rock, etc.) | |

Puzzle A

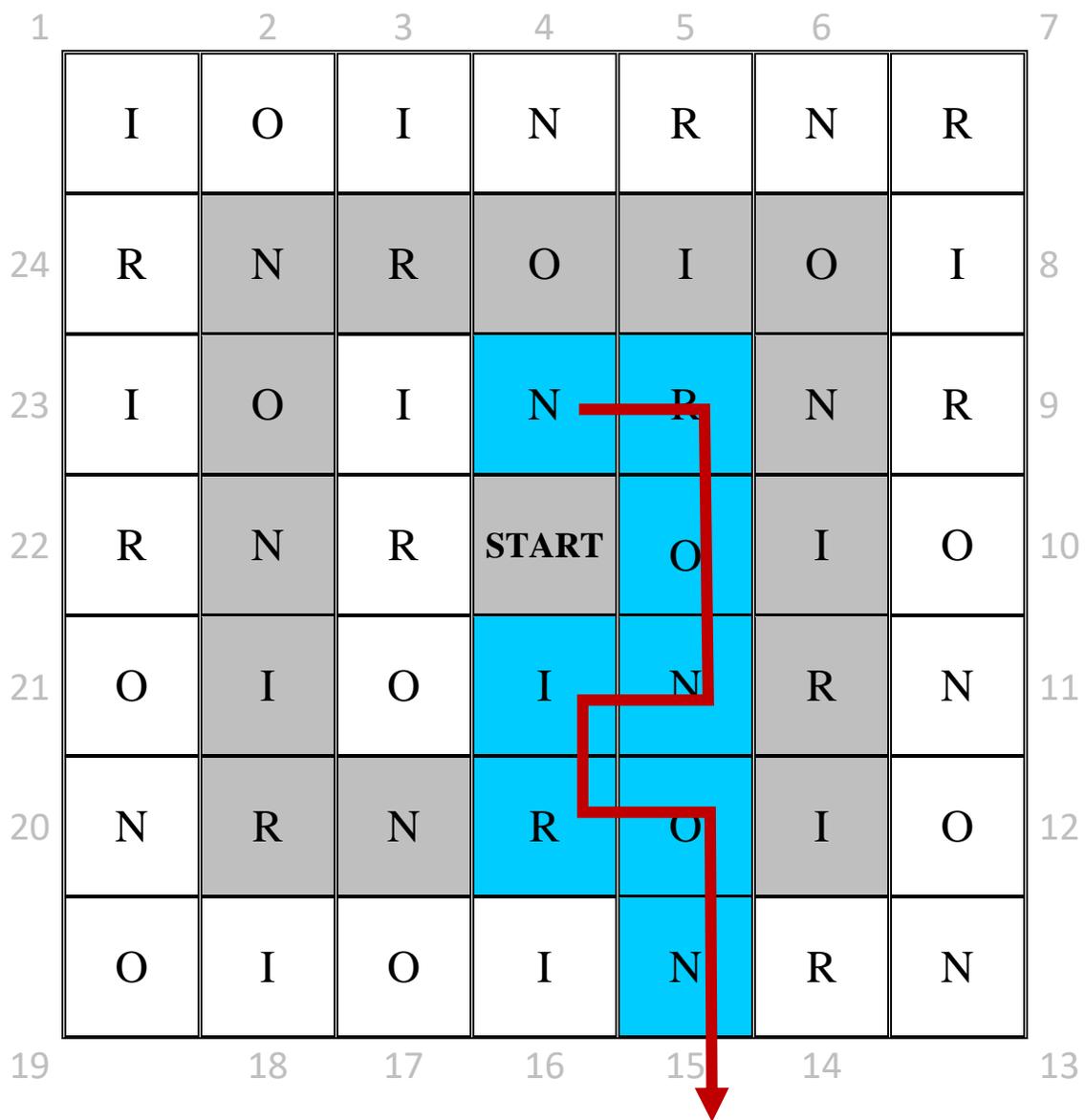
Goal: Escape from the grid by finding the correct path to the outside ring

Rules: From the **START** position, you will make 8 moves

You can move within a ring or move closer to the outside

You can move to adjacent squares, but not diagonally

You cannot re-enter a ring to move back toward the center



Where did you exit the grid? Square # **15**

N = Nominal variable

O = Ordinal variable

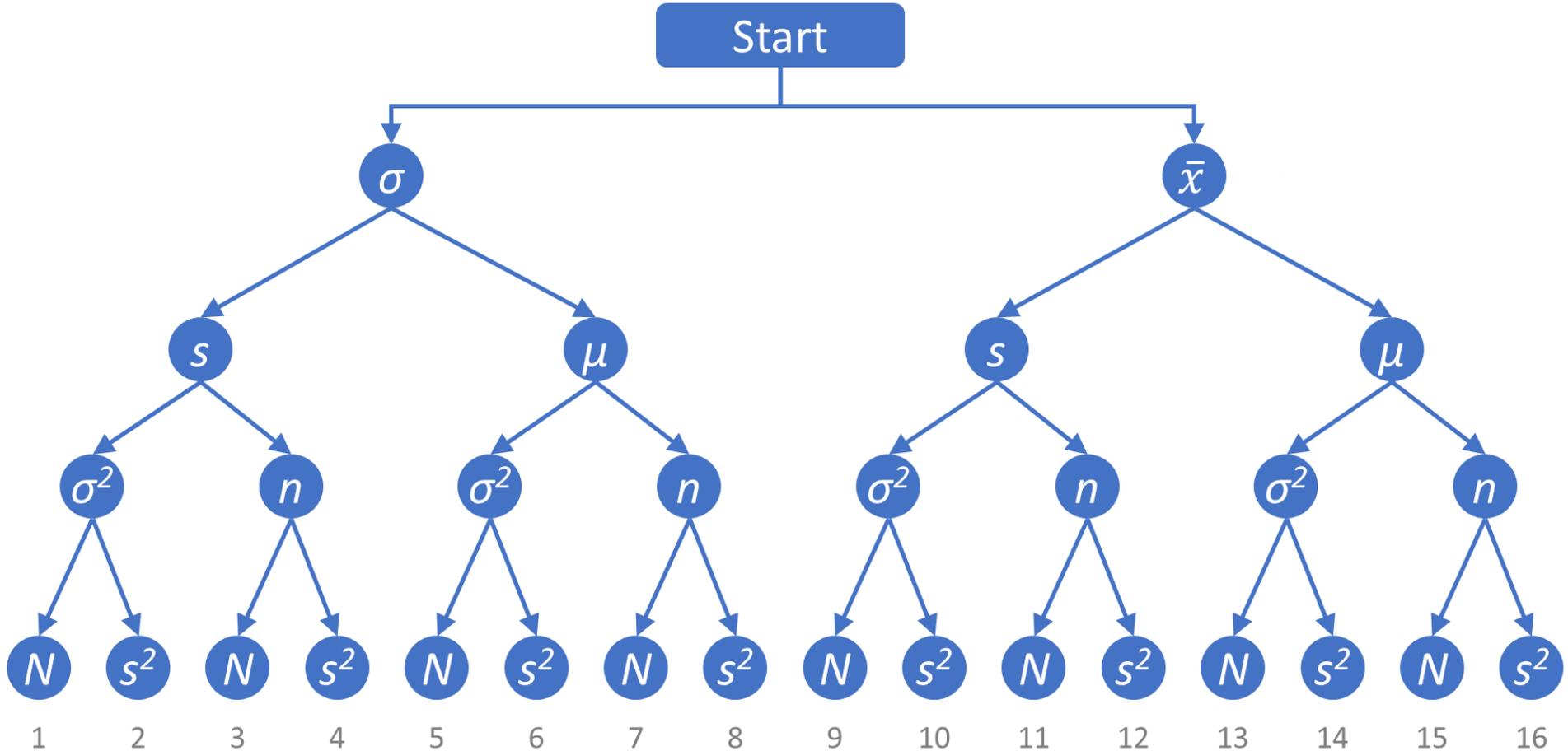
I = Interval variable

R = Ratio variable

Which level of measurement?

| | | |
|----------------------|---|----------|
| 1 st move | Eye color (brown, blue, green, etc.) | N |
| 2 nd move | Annual salary (in \$) | R |
| 3 rd move | Olympic medal (gold, silver, bronze) | O |
| 4 th move | Academic major (psychology, history, chemistry, etc.) | N |
| 5 th move | IQ score (120, 90, 140, etc.) | I |
| 6 th move | Distance travelled (in meters) | R |
| 7 th move | Level of education (high school, bachelor's, master's, etc.) | O |
| 8 th move | Favorite music genre (pop, country, rock, etc.) | N |

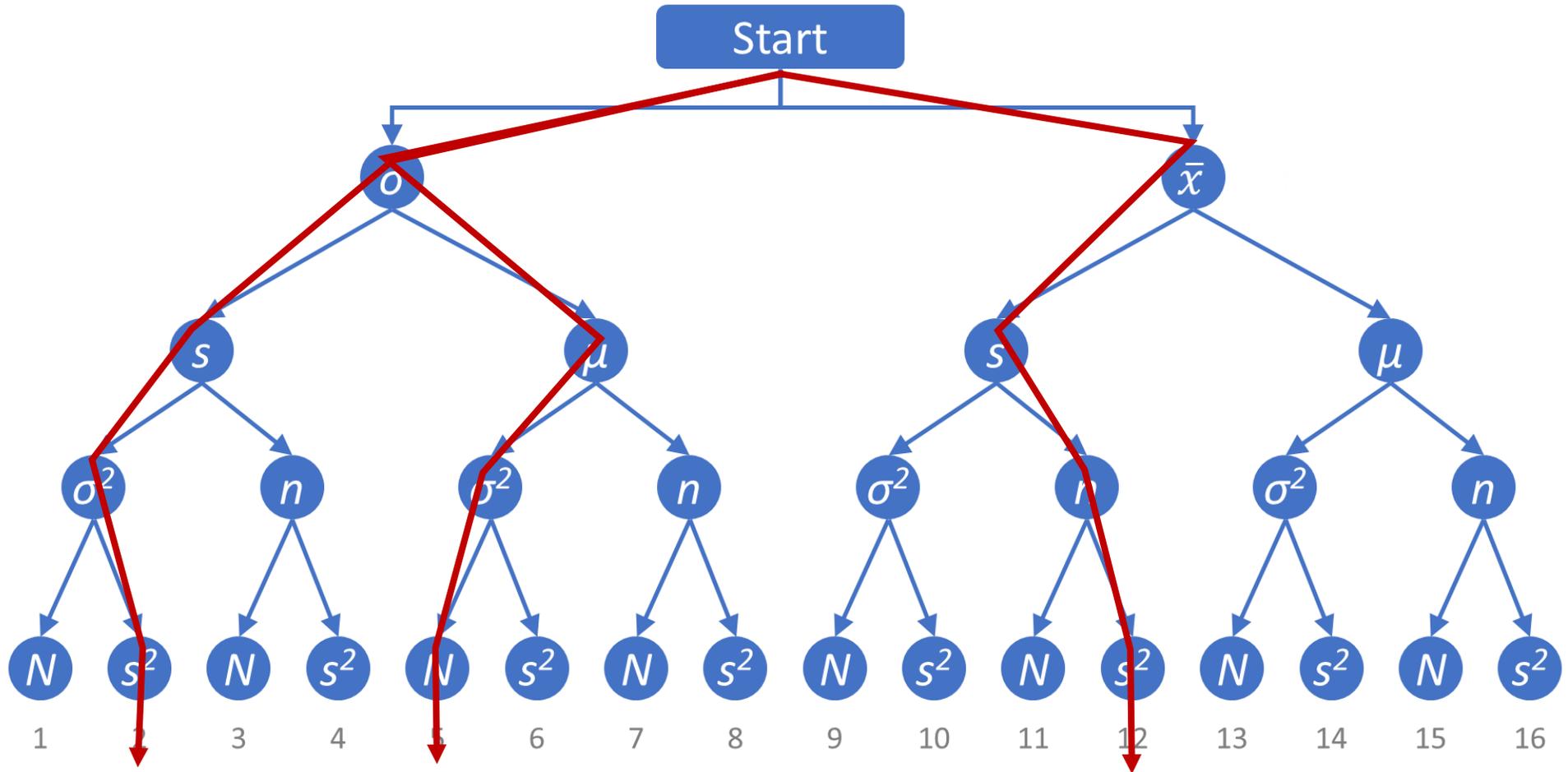
Puzzle C



Following the symbols that represent **sample** statistics leads to path #: _____

Following the symbols that represent measures of **variability** leads to path #: _____

Following the symbols that represent **population** parameters leads to path #: _____



Following the symbols that represent **sample** statistics leads to path #: **12**

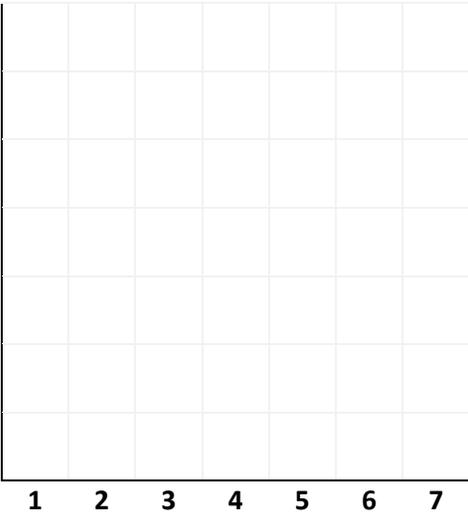
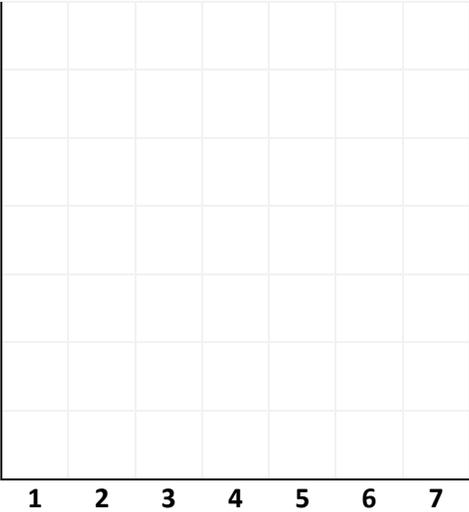
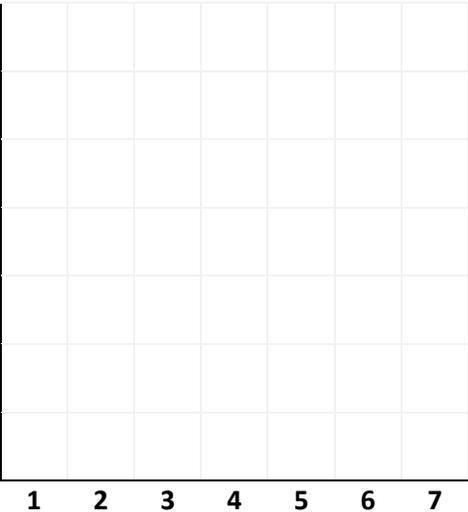
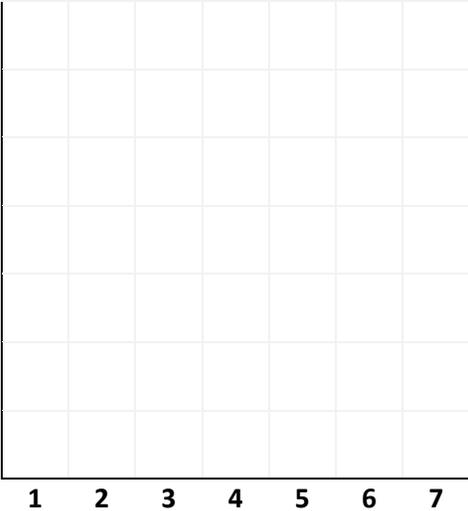
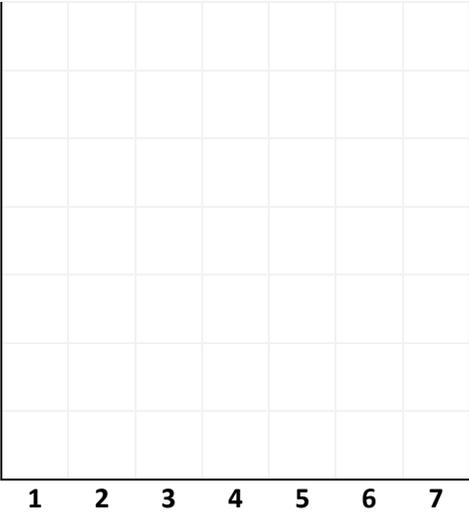
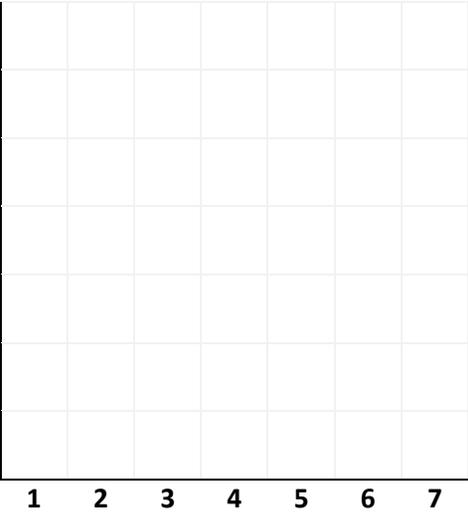
Following the symbols that represent measures of **variability** leads to path #: **2**

Following the symbols that represent **population** parameters leads to path #: **5**

Match each set of sample values to its frequency distribution
 (You can use the blank charts to help visualize the samples)

| Sample | Sample values ($n = 16$) | Which Distribution? |
|--------|--|---------------------|
| A | 6, 4, 1, 5, 5, 6, 7, 7, 3, 4, 6, 5, 5, 2, 3, 4 | Positively skewed |
| B | 6, 3, 7, 5, 2, 2, 5, 6, 3, 4, 4, 3, 5, 4, 4, 1 | Negatively skewed |
| C | 2, 5, 4, 4, 3, 6, 3, 6, 3, 1, 1, 2, 2, 1, 5, 1 | Uniform |
| D | 2, 4, 7, 4, 7, 1, 6, 1, 2, 4, 1, 7, 5, 1, 4, 7 | Bimodal |
| E | 6, 4, 5, 2, 6, 6, 1, 2, 7, 2, 3, 5, 2, 4, 1, 6 | Trimodal |
| F | 2, 4, 5, 4, 4, 2, 3, 5, 3, 2, 3, 2, 4, 5, 3, 5 | Unimodal normal |

Puzzle D



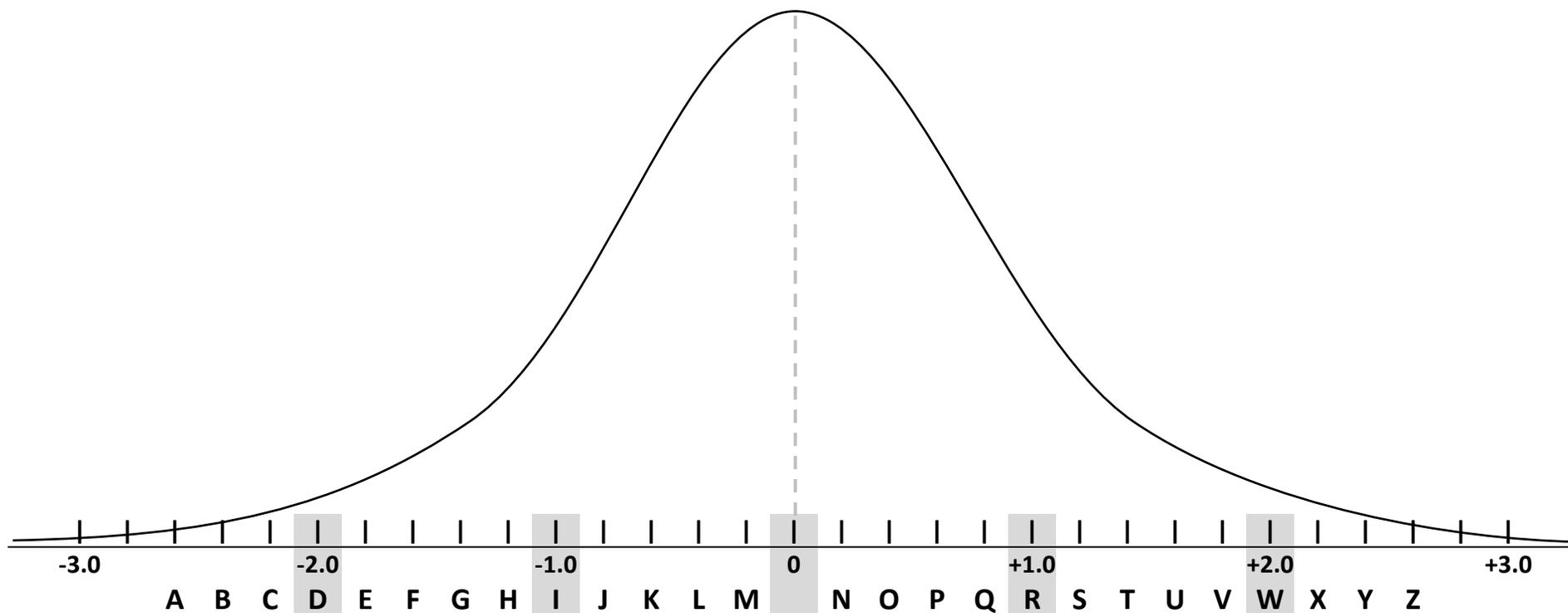
Match each set of sample values to its frequency distribution
 (You can use the blank charts to help visualize the samples)

| Sample | Sample values ($n = 16$) | Which Distribution? |
|--------|--|---------------------|
| A | 6, 4, 1, 5, 5, 6, 7, 7, 3, 4, 6, 5, 5, 2, 3, 4 | Positively skewed |
| B | 6, 3, 7, 5, 2, 2, 5, 6, 3, 4, 4, 3, 5, 4, 4, 1 | Negatively skewed |
| C | 2, 5, 4, 4, 3, 6, 3, 6, 3, 1, 1, 2, 2, 1, 5, 1 | Uniform |
| D | 2, 4, 7, 4, 7, 1, 6, 1, 2, 4, 1, 7, 5, 1, 4, 7 | Bimodal |
| E | 6, 4, 5, 2, 6, 6, 1, 2, 7, 2, 3, 5, 2, 4, 1, 6 | Trimodal |
| F | 2, 4, 5, 4, 4, 2, 3, 5, 3, 2, 3, 2, 4, 5, 3, 5 | Unimodal normal |

The diagram shows the following connections:

- Sample A connects to Positively skewed.
- Sample B connects to Negatively skewed.
- Sample C connects to Uniform.
- Sample D connects to Bimodal.
- Sample E connects to Trimodal.
- Sample F connects to Unimodal normal.

Puzzle E

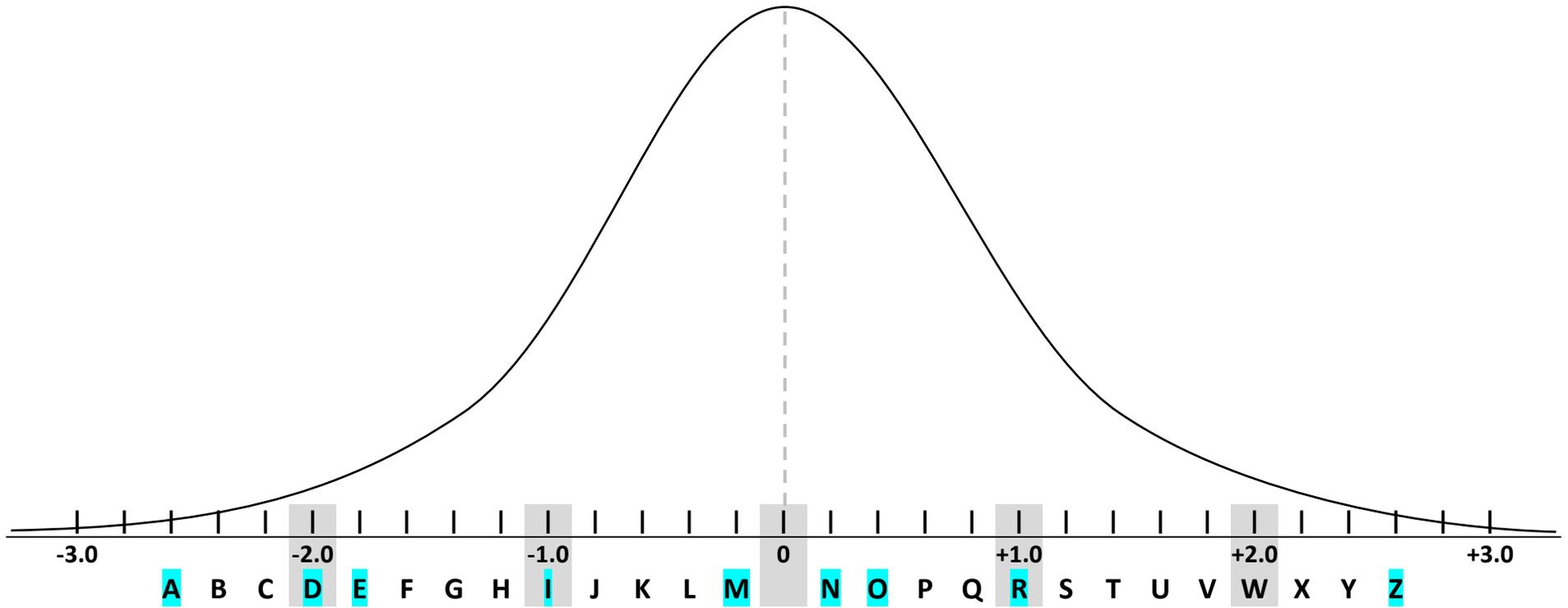


Code word: _____

Puzzle E

| # | Raw Score | Z-Score |
|---|--|---------|
| 1 | The average number of steps people walk per day is 5,000 (SD = 1,000 steps). Amy walks 6,000 steps. | |
| 2 | The mean height of American men is 5'9" (69 inches), with a standard deviation of 3 inches. Bob is 61.2 inches tall. | |
| 3 | A company manufactures products that weigh 350 grams (SD = 5 grams). A customer receives a product that weighs 351 grams. | |
| 4 | An average bag of candy contains 60 pieces (SD = 3 pieces). Derek buys a bag of candy that contains 54 pieces. | |
| 5 | A new car model has an average fuel economy of 43 miles per gallon and a standard deviation of 1.5 MPG. A test-driven vehicle gets 43.6 MPG. | |
| 6 | The average salary at a company is \$45,600 (SD = \$6,700). A specific employee makes \$44,260. | |
| 7 | The average house in a neighborhood has 3.5 bedrooms (SD = 1.5 bedrooms). One family's house has 2 bedrooms. | |
| 8 | A class takes an exam with an average score of 78% (SD = 7%). Maria's exam score is 96.2% | |
| 9 | The average cup of coffee contains 95 mg of caffeine, with a standard deviation of 15 mg. Dan's cup contains 68 mg of caffeine. | |

Puzzle E



Code word: R A N D O M I Z E

Puzzle E

| # | Raw Score | Z-Score |
|---|--|-----------------|
| 1 | The average number of steps people walk per day is 5,000 (SD = 1,000 steps). Amy walks 6,000 steps. | 1.0 = R |
| 2 | The mean height of American men is 5'9" (69 inches), with a standard deviation of 3 inches. Bob is 61.2 inches tall. | -2.6 = A |
| 3 | A company manufactures products that weigh 350 grams (SD = 5 grams). A customer receives a product that weighs 351 grams. | 0.2 = N |
| 4 | An average bag of candy contains 60 pieces (SD = 3 pieces). Derek buys a bag of candy that contains 54 pieces. | -2.0 = D |
| 5 | A new car model has an average fuel economy of 43 miles per gallon and a standard deviation of 1.5 MPG. A test-driven vehicle gets 43.6 MPG. | 0.4 = O |
| 6 | The average salary at a company is \$45,600 (SD = \$6,700). A specific employee makes \$44,260. | -0.2 = M |
| 7 | The average house in a neighborhood has 3.5 bedrooms (SD = 1.5 bedrooms). One family's house has 2 bedrooms. | -1.0 = I |
| 8 | A class takes an exam with an average score of 78% (SD = 7%). Maria's exam score is 96.2% | 2.6 = Z |
| 9 | The average cup of coffee contains 95 mg of caffeine, with a standard deviation of 15 mg. Dan's cup contains 68 mg of caffeine. | -1.8 = E |

Puzzle F

| Type | Hyp. 1 | Hyp. 2 | Hyp. 3 | Hyp. 4 | Hyp. 5 | Hyp. 6 | Hyp. 7 | Hyp. 8 |
|-----------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| Non-directional Null | H | A | G | E | L | F | O | D |
| Directional Null | P | I | W | O | E | R | A | N |
| Non-directional Alternative | T | E | L | U | R | D | U | R |
| Directional Alternative | B | O | E | A | P | L | E | L |

Code Word:

Puzzle F

| Type | Hyp. 1 | Hyp. 2 | Hyp. 3 | Hyp. 4 | Hyp. 5 | Hyp. 6 | Hyp. 7 | Hyp. 8 |
|-----------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| Non-directional Null | H | A | G | E | L | F | O | D |
| Directional Null | P | I | W | O | E | R | A | N |
| Non-directional Alternative | T | E | L | U | R | D | U | R |
| Directional Alternative | B | O | E | A | P | L | E | L |

Code Word: P O W E R F U L