

Name: _____

Estimating Probabilities Using Data

Directions: Use the data chart below to answer the questions that follow. Express your answers as a fraction, decimal, or a percent. Round all of your decimal answers to the thousandths decimal place and all of your percent answers to the nearest tenth of a percent.

DATA: Charlie randomly selected marbles from a large jar. The table below shows the number of each color of marbles in the jar.



| Color | Red | Blue | Yellow | Orange | Black | Teal |
|--------|-----|------|--------|--------|-------|------|
| Number | 6 | 5 | 3 | 3 | 10 | 3 |

If Charlie were to randomly select one marble from the jar...

- 1.) What is the estimate for the probability of him selecting a blue marble from the jar?
- 2.) What is the estimate for the probability of selecting a black marble from the jar?
- 3.) What is the estimate for the probability of selecting a red marble *or* a yellow marble from the jar?
- 4.) What is the estimate for the probability of selecting a non-blue marble from the jar?
- 5.) What is the estimate for the probability of selecting a purple marble from the jar?
- 6.) Which color marble is most likely to be selected?
- 7.) Which event is more likely to occur? Circle your answer.
Event A: Selecting a yellow, orange, *or* teal marble.
Event B: Selecting a red *or* blue marble.
Event C: Selecting a black marble.
- 8.) If 20 purple marbles were added to the jar, what would happen to the probability of selecting a black marble? Explain your answer.

ANSWER KEY

1.) What is the estimate for the probability of him selecting a blue marble from the jar?

$$\frac{5}{30} \text{ or } 0.167 \text{ or } 16.7\%$$

2.) What is the estimate for the probability of selecting a black marble from the jar?

$$\frac{10}{30} \text{ or } \frac{1}{3} \text{ or } 0.33 \text{ or } 33.3\%$$

3.) What is the estimate for the probability of selecting a red marble or a yellow marble from the jar?

$$\frac{9}{30} \text{ or } \frac{3}{10} \text{ or } 0.3 \text{ or } 30\%$$

4.) What is the estimate for the probability of selecting a non-blue marble from the jar?

$$\frac{25}{30} \text{ or } \frac{5}{6} \text{ or } 0.833 \text{ or } 83.3\%$$

5.) What is the estimate for the probability of selecting a purple marble from the jar?

$$\frac{0}{30} \text{ or } 0 \text{ or } 0\%$$

6.) Which color marble is most likely to be selected?

black

7.) Which event is more likely to occur? Circle your answer.

Event A: Selecting a yellow, orange, or teal marble. $\frac{9}{30}$

Event B: Selecting a red or blue marble. $\frac{11}{30}$

Event C: Selecting a black marble. $\frac{10}{30}$

8.) If 20 purple marbles were added to the jar, what would happen to the probability of selecting a black marble? Explain your answer.

**The probability of selecting a black marble would decrease from $\frac{1}{3}$ to $\frac{1}{5}$ (or from 33.3% to 20%).
Explanations will vary.**