Suppose you have two red marbles and three blue marbles. Draw cords to show all of the different ways that you could select two marbles. Label a cord between marbles of the same color $S$; label a cord between marbles of different colors $D$.

How many cords did you draw? __________
How many cords are for SAME? __________
How many cords are for DIFFERENT? __________
Write the probabilities in the boxes.

Which is more likely, SAME or DIFFERENT? ____________
This game uses three red marbles and three blue marbles.

SAME
Draw cords to show all of the ways you could select two marbles of the same color.

DIFFERENT
Draw cords to show all of the ways you could select two marbles of different colors.

How many cords are for SAME? __________
How many cords are for DIFFERENT? __________
Altogether, how many cords did you draw? __________

Write the probabilities in the boxes.

Which is more likely, SAME or DIFFERENT? _____________
Suppose you have one red, two blue, and two white marbles.

**SAME**
Show all of the possible ways of selecting two marbles of the **same** color.

**DIFFERENT**
Show all of the possible ways of selecting two marbles of **different** colors.

How many cords are for SAME? __________
How many cords are for DIFFERENT? __________
Altogether, how many cords did you draw? __________
Write the probabilities in the boxes.

Which is more likely, SAME or DIFFERENT? ____________
Suppose you have one red, two blue, and three white marbles.

**SAME**
Show all of the possible ways of selecting two marbles of the same color.

**DIFFERENT**
Show all of the possible ways of selecting two marbles of different colors.

How many cords are for SAME? __________
How many cords are for DIFFERENT? __________
Altogether, how many cords did you draw? __________
Write the probabilities in the boxes.

Which is more likely, SAME or DIFFERENT? ___________
Suppose you have two red marbles and two blue marbles. You mix them up and select one marble at random. You put it back and select another marble at random.

Show all of the possible ways of selecting two marbles of the same color.

Show all of the possible ways of selecting two marbles of different colors.

Write the probabilities in the boxes.

Which is more likely, SAME or DIFFERENT? ____________
Suppose you have two red marbles and three blue marbles. You mix them up and select one marble at random. You put it back and select another marble at random.

Show all of the possible ways of selecting two marbles of the **same** color.

Show all of the possible ways of selecting two marbles of **different** colors.

Write the probabilities in the boxes.

Which is more likely, SAME or DIFFERENT? ______________
Draw a bar graph to show the frequency of each sum. One is done for you.
Complete. Two squares are filled in for you.

Draw a bar graph to show the frequency of each difference.

How many ways does Helen have to win? _________
How many ways does Bruce have to win? _________
How many ways does Victor have to win? _________
Use the information on Worksheet P1(a) to answer these questions.

What is the probability that the sum is 6? ____________

What is the probability that the sum is not 6? ____________

What is the probability that the sum is more than 6? ________

What is the probability that the sum is less than 6? ________

When Bruce goes home, Helen and Victor decide to continue playing the sum game. They wish to play a fair game. List the sums each person could take to make the game fair.

Helen ____________________

Victor ____________________

Explain why your solution produces a fair game.
Use the information on Worksheet P1(b) to answer these questions.

What is the probability that the difference is 1? ____________

What is the probability that the difference is not 1? ____________

What is the probability that the difference is 0? ____________

What is the probability that the difference in not 0? ____________

When Helen goes home, Bruce and Victor decide to continue playing the difference game. They want to play a fair game. List the differences each person could take to make a game fair.

   Bruce  ______________________

   Victor  ______________________

Explain why your solution produces a fair game.
Use a ruler, if you wish, to answer these questions.

How many squares of this size fit into the red region? _______

How many squares of this size fit into the blue region? _______
The king has another maze near the castle. If Reynaldo goes through this maze, find his probability of entering the room with the princess.

Use this square to help you solve the problem.

What is Reynaldo’s probability of finding the princess? ________

What is Reynaldo’s probability of finding the tigers? ________
Alice, Bruce, and Carl agree to play the following game.

1. Spin this spinner.

2. Select two marbles at random from the appropriate cup.

Winners: Alice wins if two red marbles are chosen.
Bruce wins if one red marble and one blue marble are chosen.
Carl wins if two blue marbles are chosen.

Use cords to show the winning combinations for cup H.

Use this square to show each player’s probability of winning.

Alice ___ Bruce ___ Carl ____
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Determine the number of times each letter appears in the message.

<table>
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<th>Letter</th>
<th>Frequency</th>
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<td>Z</td>
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</table>
Distribute 3 red marbles and 3 blue marbles into the two cups. Use all 6 marbles and put at least one marble in each cup.

Use the square below to calculate the probabilities of winning with this distribution of marbles.

What is Bruce’s probability of winning? ________

What is the player’s probability of winning? ________

Who is favored, Bruce or the player? ________
Distribute 3 red marbles and 3 blue marbles into the two cups. Use all 6 marbles and put at least one marble in each cup.

Cup 1

Cup 2

Use the square below to calculate the probabilities of winning with this distribution of marbles.

What is Bruce’s probability of winning? ________

What is the player’s probability of winning? ________

Who is favored, Bruce or the player? ________
Measurements of the depth of the water below a bridge are taken at 2, 6, 10, and 14 meters from the lake shore. The mean average depth is 2 meters. Draw a possible profile of the lake below the bridge.
This is the data the park ranger provided for the depth of the water below the bridge.

8 measurements
Mean: 2 meters
Mode: 1 meter
Range: 1 to 8 meters

What could the eight measurements have been?
____m, ____m, ____m, ____m, ____m, ____m, ____m, ____m

Measurements were taken at 1, 3, 5, 7, 9, 11, 13, and 15 meters from the lake shore. Based on the eight measurements you listed, draw a profile of the lake below the bridge.
Rita: 9  Bruce: 8

Rita leads Bruce 9-8 in a game to 10 points when they must stop playing. Use this square to calculate each player’s probability of winning.

What is Rita’s probability of winning? ______ Bruce’s ______

If Rita and Bruce each put 50¢ into a pot, how should they share the $1.00 when the game stops at 9-8? Rita ______ Bruce ______
Rita and Bruce are tied in a game to 10 points when they must stop playing. Use this square to calculate each player’s probability of winning.

Rita: 9       Bruce: 9

What is Rita’s probability of winning? ______  Bruce’s ______
Rita: 9        Bruce: 6

Rita leads Bruce 9-6 in a game to 10 points when they must stop playing. Use this square to calculate each player’s probability of winning.

\[
\begin{array}{c}
9 - 6
\end{array}
\]

What is Rita’s probability of winning? ______ Bruce’s ______
Sylvia must get to the ferry in 40 minutes.

Use a square to calculate her probability of arriving on time.

What is Sylvia’s probability of getting to the ferry on time? _________
Mike is at A. He must travel to F in 60 minutes or less. Calculate his probability of success if he randomly chooses which paths to follow, but does not take the same path twice.

What is Mike’s probability of getting to F in 60 minutes or less?
For each picture, do the two knots form one long piece of rope? Circle your answer.

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<td><img src="image7.png" alt="Image" /></td>
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<td><img src="image11.png" alt="Image" /></td>
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</table>

Yes | No | Yes | No | Yes | No | Yes | No | Yes | No
## Distance Dropped (cm)

<table>
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<tr>
<th>Trial Number</th>
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<td>Distance Dropped (cm)</td>
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![Graph](image_url)
Each of these students believes that he or she has the fastest reaction time. Try to find and explain each person’s reason.

Arnold ____________________________________________
____________________________________________

Lucy ____________________________________________
____________________________________________

Michelle ____________________________________________
____________________________________________

Pierre ____________________________________________
____________________________________________

Who do you think has the fastest reaction time? ___________
Why?_____________________________________________
Use the data you recorded on Worksheet P4(a) to find your best result, mean, mode, and median.

Your **best single result** is the shortest drop in the ten trials.

Best single result: __________

Calculate your **mean**: add the ten results and divide the sum by 10.

Mean: __________

Your **mode** is the measurement that occurred most often. You may have more than one mode.

Mode(s): __________

Calculate your **median**: first order your ten results from shortest to longest.

____, ____, ____, ____, ____, ____, ____, ____, ____, ____, ______________

Then add the two middle numbers and divide the sum by 2.

Median: __________
Problem #1

Group: __________

Teacher selects the ________ cube.
Student selects the ________ cube.

Answer: \[ p(_______, ________) = ________ \]
Problem #2

Group: __________

Teacher selects the ________ cube.
Student selects the ________ cube.

Answer: $p (_______, ________) = ________$
Percent of Recommended Daily Allowance (RDA) (U.S. Department of Agriculture)

<table>
<thead>
<tr>
<th>Nutribest (28 gram serving)</th>
<th>Brand X (28 gram serving)</th>
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<tbody>
<tr>
<td>5 grams</td>
<td>Protein</td>
</tr>
<tr>
<td>0.24 grams</td>
<td>Sodium</td>
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<td>Percent of RDA</td>
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<tr>
<td>NUTRIBEST (28 gram serving)</td>
<td>Thiamine</td>
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<tr>
<td>BRAN D X (28 gram serving)</td>
<td>Thiamine</td>
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<td>Vitamin A</td>
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These signs all advertise the same CDs.

Which has a better price: Omega Recordings or Dave’s Disks? Explain why. _______________________________________
__________________________________________________
__________________________________________________

List the stores from lowest to highest according to the sale price per CD.

______________________, ________________, ____________

Lowest price ____________________________ Highest price