Name _____ Date _____

Master 11.11a

Step-by-Step 1

Lesson 1, Question 5

Step 1 Yellow is more likely, so there are more _____ sectors than red.
Red is more likely, so there are more _____ sectors than blue.
Look at the first spinner on Master 11b. It has 8 sectors.
How many sectors will you colour yellow? ____ red? ____ blue? ____
Colour the spinner.
Is there a different way to colour the spinner? Explain.
_____

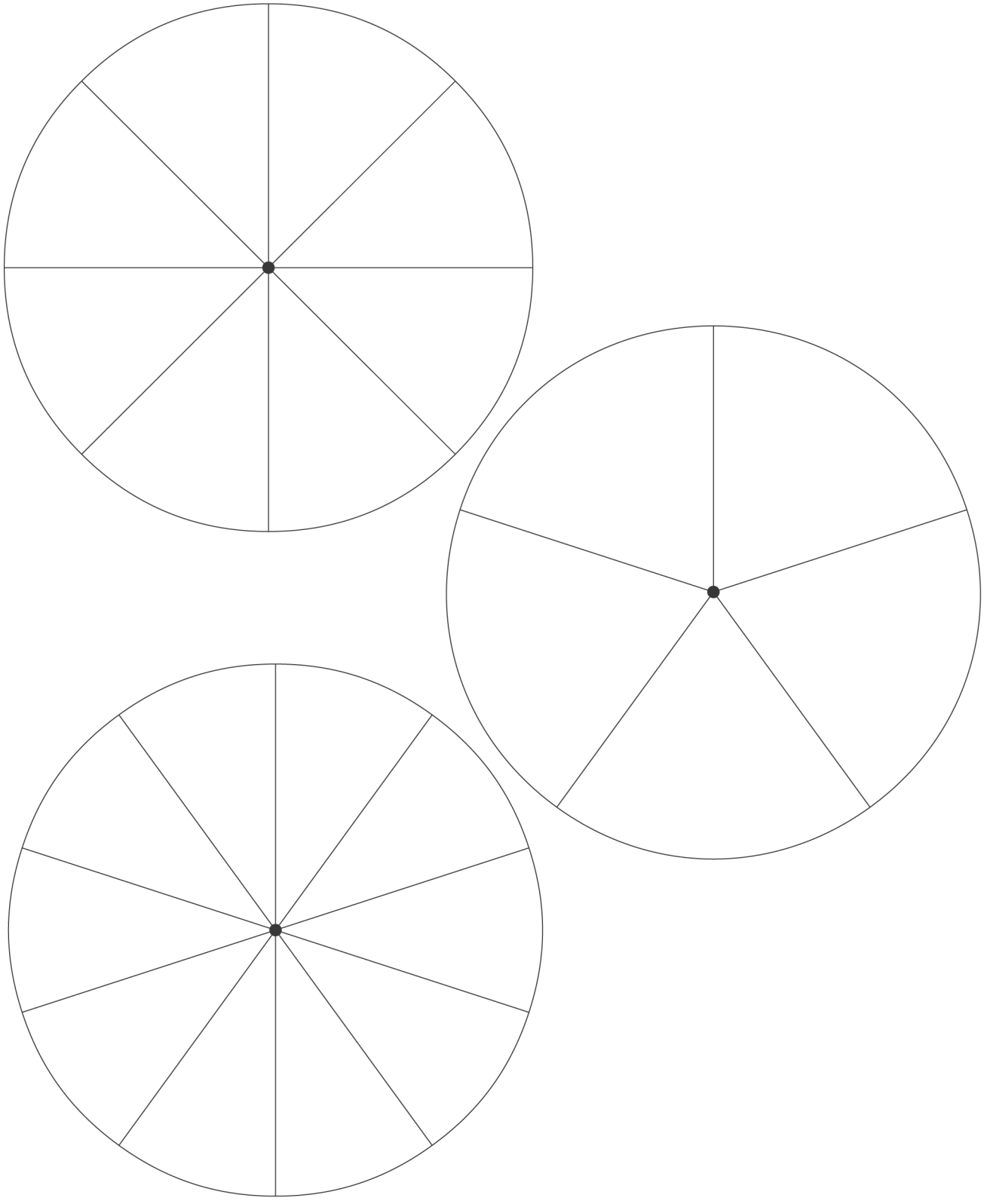
Step 2 Blue and green are equally likely.
They cover _____ sectors.
Yellow is more likely. It covers _____ sectors.
Look at the second spinner on Master 11b. It has 5 sectors.
How many sectors will you colour blue? ___ green? ___ yellow? ___
Colour the spinner.
Is there a different way to colour the spinner? Explain.
_____

Step 3 Yellow is certain.
Are there any blue sectors? _____ Are there any red sectors? _____
Look at the third spinner on Master 11b. It has 10 sectors.
Yellow covers _____ of the sectors.
Colour the spinner.
Is there a different way to colour the spinner? Explain.
_____

Name _____ Date _____

Master 11.11b

Spinners for Lesson 1, Question 5



Name _____ Date _____

Master 11.12

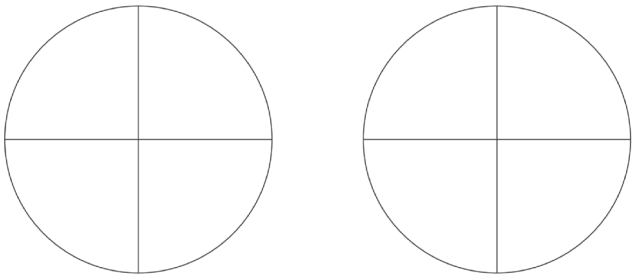
Step-by-Step 2

Lesson 2, Question 4

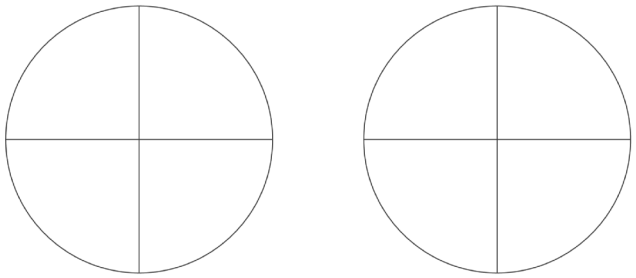
> Vicki scores a point if the pointers land on the same colour.
> Alastair scores a point if the pointers land on different colours.

Make the spinners identical for each case.

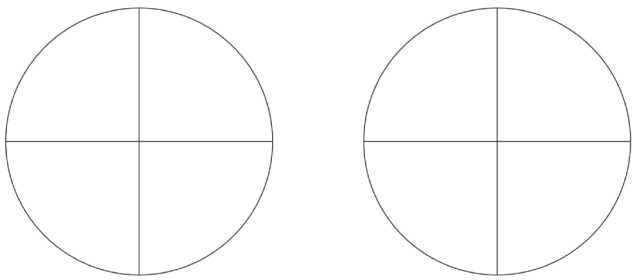
Step 1 Vicki will win if the spinners are mostly one colour. Choose 2 colours. Colour the spinners so that Vicki is more likely to win.



Step 2 Alastair will win if each spinner has 4 different colours. Choose 4 colours. Colour the spinners so that Alastair is more likely to win.



Step 3 The game is fair if the pointers are equally likely to land on the same colour or a different colour. Choose 2 colours. Colour the spinners so that Vicki and Alastair have equal chances of winning.



Name _____ Date _____

Master 11.13

Step-by-Step 3

Lesson 3, Question 2

Step 1 What are the possible outcomes when Dave tosses a coin?

_____ or _____

Step 2 Dave tosses heads 12 times out of 20.

So, Dave got tails 20 – _____ = _____ times

Step 3 What fraction of the tosses were heads? $\frac{\square}{20}$

What fraction of the tosses were tails? $\frac{\square}{20}$

Step 4 How many times would you expect Dave to get heads in 20 tosses? _____

What fraction of the tosses would be heads? _____

How do Dave's results compare with what you expected?

_____

_____

Name _____ Date _____

Master 11.14

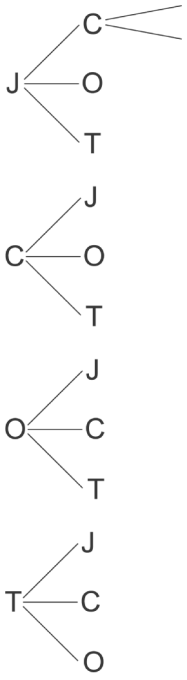
Step-by-Step 4

Lesson 4, Question 3

Jawaan, Carl, Orenda, and Tansy run in the relay race.

Step 1 Complete this tree diagram.
Show all the possible orders for the 4 runners.

J = Jawaan C = Carl O = Orenda T = Tansy



Step 2 How many possible orders did you find? _____
How many orders have Tansy running first? _____

Step 3 The runners' names are drawn from a hat.
What fraction describes Tansy's probability of running first? _____

Step 4 If you were the track coach, how would you decide on the order of your relay team? Would you pull names from a hat? Explain.

_____

_____

Name _____ Date _____

Master 11.15

Step-by-Step 6

Lesson 6, Question 2

Step 1 What are the possible outcomes of tossing 3 coins?
Complete this table.

First Coin	Second Coin	Third Coin
Heads	Heads	Heads
Heads	Heads	Tails
Heads	Tails	
Heads		
Tails	Tails	Tails
Tails		
Tails		
Tails		

Step 2 How many different outcomes are possible? _____

Step 3 If a game is fair, each player has an equal chance of winning.
How can we divide the number of possible outcomes into 2 equal parts?

_____

Step 4 Look at the table in *Step 1*.

How many outcomes include at least 2 heads? _____

How many outcomes include at least 2 tails?_____

Make up a fair game with 3 coins.

Player A gets a point if _____.

Player B gets a point if _____.

How do you know this game is fair?

_____

Name _____ Date _____

Master 11.16a

Unit Test: Unit 11 Probability

Part A

1. Use the words *likely*, *unlikely*, *impossible*, *possible*, or *certain* to describe each event.

a) The sun will rise tomorrow. _____

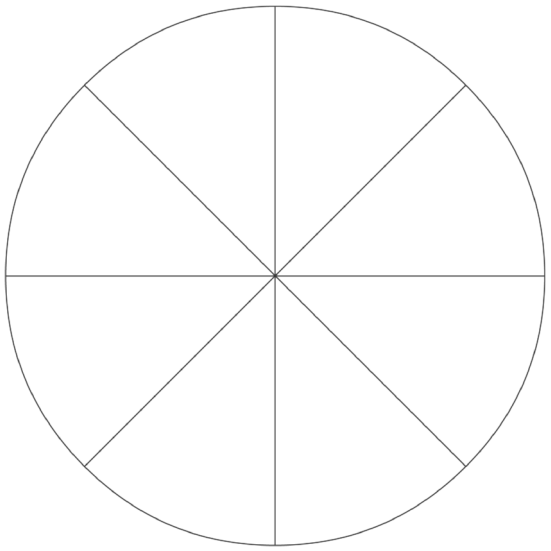
b) You will dig to the centre of the Earth. _____

c) You will win a gold medal at the Olympics. _____

d) You will sleep tonight. _____

2. Eric has red, green, yellow, and blue marbles.
He wants to give Andrea 2 marbles.
What possible colour combinations can he give her?

3. Colour this spinner so that green is more likely than blue and blue is more likely than red.



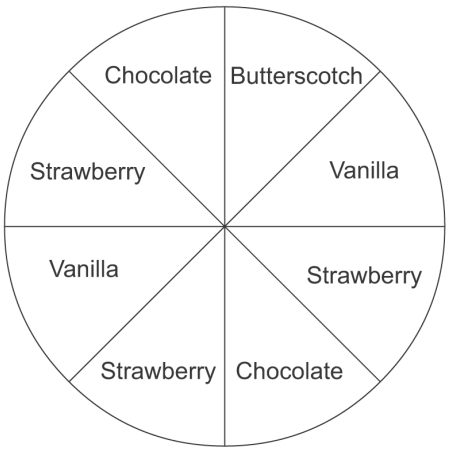
Name _____ Date _____

Master 11.16b

Unit Test continued

Part B

4. Ruby will use this spinner to choose a flavour of ice cream.



a) What is the probability that Ruby will order strawberry ice cream?

_____

b) Which flavours have equal chances of being ordered?

_____

c) Just for fun, Ruby spun the spinner 40 times. Here are her results: Chocolate 8, Vanilla 10, Strawberry 17, Butterscotch 5

Are these results what you would expect? Explain.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Name _____ Date _____

Master 11.16c

Unit Test continued

Part C

5. Design a fair game of chance for 2 players. Use a 2-colour counter and a number cube. Each player should have a different way of scoring a point. Explain how you know your game is fair.

_____

_____

_____

_____

_____

_____

_____

_____

Name _____ Date _____

Master 11.17

Sample Answers

Unit Test – Master 11.16

Part A

1. a) Certain
b) Impossible
c) Possible or unlikely
d) Likely

2. Red/green, red/yellow, red/blue, green/yellow, green/blue, yellow/blue

3. Students should colour the spinner so that green covers the greatest area (for example, $\frac{4}{8}$).

The blue area is smaller than green but larger than red (for example, $\frac{3}{8}$).

Red covers the smallest area (for example, $\frac{1}{8}$).

Part B

4. a) $\frac{3}{8}$

b) Chocolate and vanilla

c) These results are what I would expect. They are close to the predicted probabilities, even though they don't match them exactly. My predicted probabilities were: chocolate and vanilla should each be about $\frac{2}{8}$ of 40, or 10.

Strawberry should be about $\frac{3}{8}$ of 40, or 15.

Butterscotch should be about $\frac{1}{8}$ of 40, or 5.

Part C

5. Players take turns tossing the counter and rolling the number cube. Player A scores a point if the counter is red and the number cube shows an even number. Player B scores a point if the counter is white and the number cube shows an odd number. I know this game is fair because there is an equal number of ways for each player to score.

Extra Practice Masters 11.18–11.21

Go to the CD-ROM to access editable versions of these Extra Practice Masters.

Name _____ Date _____

Master 11.18 **Extra Practice 1**

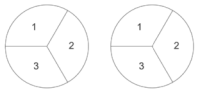
Lesson 1: The Likelihood of Events

1. Describe a situation that is:
   a) likely but not certain
   b) unlikely but possible
   c) impossible
   d) certain

2. Describe each outcome.
   Use the words: *impossible, unlikely, likely, certain.*
   a) Someone in your class will win the lottery.
   b) It will rain tomorrow.
   c) You will go skiing tomorrow.
   d) A dog will fly by the classroom window.

Lesson 2: Calculating Probability

1. Suppose you spin the pointers on these two spinners and add the results.



   a) What are the possible sums you can produce?
   b) What is the probability that you will produce a sum of 6?

Name _____ Date _____

Master 11.19 **Extra Practice 2**

Lesson 3: Probability and Fractions

1. Tara has a collection of small stuffed animals.
   She has 10 bears, 4 dogs, 4 cats, and 2 rabbits.
   Suppose Tara puts all her animals in a pillowcase and picks one without looking.
   Use a fraction to describe the probability that she will pick:
   a) a bear b) a rabbit c) a dog

2. Max has a bag of 25 candies. The probability of choosing a lemon candy is $\frac{1}{5}$. The probability of choosing a mint candy is $\frac{2}{5}$. How many lemon candies are in the bag? How many mint candies are in the bag?

Lesson 4: Tree Diagrams

1. Omar's class is painting pottery.
   Students can choose to paint a bowl, a plate, or a mug.
   They can use blue, green, yellow, or purple paint.
   a) Use a tree diagram to show all the different pieces of pottery Omar could make.
   b) What fraction of the choices are mugs?
   c) What is the probability that a student will paint a yellow mug?

Name _____ Date _____

Master 11.20 **Extra Practice 3**

Lesson 6: Probability in Games

1. Brajit and Annie have an envelope containing 6 paper clips: 2 yellow, 2 green, and 2 blue.
   They play a game.
   Each person pulls a paper clip from the envelope without looking.
   If the clips are the same colour, Brajit wins a point.
   If the clips are different colours, Annie wins a point.
   Is this a fair game? Explain your thinking.

2. Design a fair game using coloured paper clips.

Name _____ Date _____

Master 11.21 **Sample Answers**

Extra Practice 1 – Master 11.19

Lesson 1

1. a) It will rain today.
   b) A rose bush will bloom in January.
   c) The moon is made of green cheese.
   d) I will go to bed tonight.

2. a) Impossible
   b) Likely
   c) Unlikely
   d) Impossible

Lesson 2

1. a) 2, 3, 4, 5, and 6
   b) $\frac{5}{9}$

Extra Practice 2 – Master 11.19

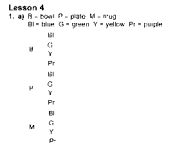
Lesson 3

1. a) $\frac{3}{5}$ or $\frac{}{}$
   b) $\frac{2}{20}$ or $\frac{1}{}$
   c) $\frac{4}{20}$ or $\frac{}{}$

2. There are 5 lemon candies in the bag.
   There are 10 mint candies in the bag.

Lesson 4

1. a) B = bowl, P = plate, M = mug
   Bl = blue, G = green, Y = yellow, Pr = purple



   b) $\frac{1}{}$ of the choices are mugs
   c) $\frac{}{}$

Extra Practice 3 – Master 11.20

Lesson 6

1. This is not a fair game. There are 9 different possible pairs for pulling 2 paper clips. Only 3 of these have matching colours. Annie's probability of winning is double that of Brajit.

2. Place 3 blue paper clips and 3 red paper clips in a bag. Each player draws one paper clip from the envelope. Player A gets a point if both paper clips are blue. Player B gets a point if both paper clips are red. No one scores if the clips are different colours.

Addison Wesley Mathematics Makes Sense

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