2025 MCAS Sample Student Work and Scoring Guide

Grade 7 Mathematics
Question 5: Constructed-Response

Reporting Category: Ratios and Proportional Relationships
Standard: 7.SP.C.8 - Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.
Item Description: Find the probability of a compound event using a tree diagram and simulation, and make an organized list based on the simulation.
Calculator: Not allowed

This item can be found in the released item sets on the MCAS Resource Center.

Scoring Guide

Select a score point in the table below to view the sample student response.

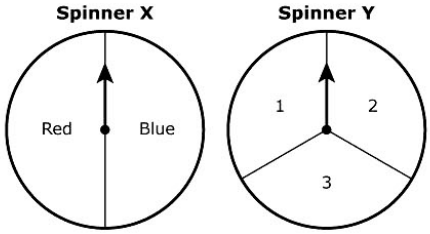
Score*	Description
4A	The student response demonstrates an exemplary understanding of the Statistics and Probability concepts involved in finding the probabilities of compound events using organized lists, tables, and tree diagrams. The student represents the sample space of an event using an organized list and then calculates the probabilities of different outcomes of the event.
4B	
3	The student response demonstrates a good understanding of the Statistics and Probability concepts involved in finding the probabilities of compound events using organized lists, tables, and tree diagrams. Although there is significant evidence that the student was able to recognize and apply the concepts involved, some aspect of the response is flawed. As a result, the response merits 3 points.
2	The student response demonstrates a fair understanding of the Statistics and Probability concepts involved in finding the probabilities of compound events using organized lists, tables, and tree diagrams. While some aspects of the task are completed correctly, others are not. The mixed evidence provided by the student merits 2 points.
1	The student response demonstrates a minimal understanding of the Statistics and Probability concepts involved in finding the probabilities of compound events using organized lists, tables, and tree diagrams.
0	The student response contains insufficient evidence of an understanding of the Statistics and Probability concepts involved in finding the probabilities of compound events using organized lists, tables, and tree diagrams to merit any points.

*Letters are used to distinguish between sample student responses that earned the same score (e.g., 4A and 4B).

Score Point 4A

This question has four parts.

A student designed two spinners, Spinner X and Spinner Y. Each of the spinners is divided into congruent sections and labeled, as shown.



The student will spin the arrow on each spinner one time.

Part A

What is the probability that the arrow on Spinner X will stop on a section labeled "Red"?

Enter your answer in the space provided.

$\frac{1}{2}$ or 50% chance.

Part B

List all of the possible outcomes that can occur when the arrow on Spinner X and the arrow on Spinner Y are each spun one time.

Enter your list in the space provided.

Red, 1
Red, 2
Red, 3
Blue, 1
Blue, 2
Blue, 3

Part C

What is the probability that the arrow on Spinner X will stop on a section labeled "Red" **and** the arrow on Spinner Y will stop on a section labeled with an odd number? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

$\frac{1}{3}$ probability because out of the six outcomes, two are red and an odd number so a $\frac{2}{6}$ probability, which can simpify to $\frac{1}{3}$.

Part D

What is the probability that the arrow on Spinner X will stop on a section labeled "Red" **or** the arrow on Spinner Y will stop on a section labeled with an odd number? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

$\frac{5}{6}$ probability because there is only one out of the six possible outcomes that the spinner will not land on red or an odd number, but the other five outcomes are fine. So since $\frac{5}{6}$ possible outcomes will have red or an odd number, the probability is $\frac{5}{6}$.

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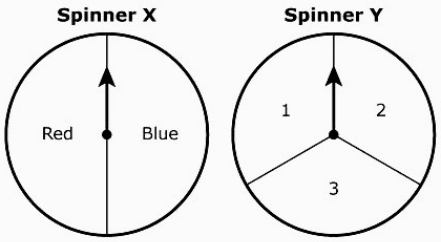
Score Point 4B

This question has four parts.

A student designed two spinners, Spinner X and Spinner Y. Each of the spinners is divided into congruent sections and labeled, as shown.



The student will spin the arrow on each spinner one time.

Part A

What is the probability that the arrow on Spinner X will stop on a section labeled "Red"?

Enter your answer in the space provided.

50% or $\frac{1}{2}$ times

Part B

List all of the possible outcomes that can occur when the arrow on Spinner X and the arrow on Spinner Y are each spun one time.

Enter your list in the space provided.

red, 1
red, 2
red, 3
blue, 1
blue, 2
blue,3

Part C

What is the probability that the arrow on Spinner X will stop on a section labeled "Red" **and** the arrow on Spinner Y will stop on a section labeled with an odd number? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

$\frac{1}{3}$ because looking at my list, there are 6 total possibilities, and 2 of them fit the criteriea.

Part D

What is the probability that the arrow on Spinner X will stop on a section labeled "Red" **or** the arrow on Spinner Y will stop on a section labeled with an odd number? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

$\frac{5}{6}$ because 5 of the 6 above have red or have an odd number.

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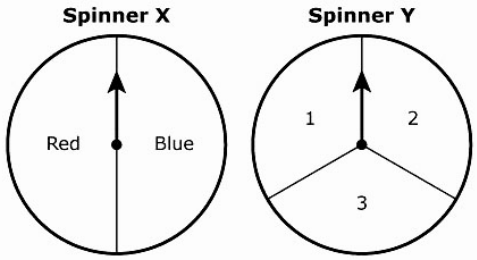
Score Point 3

This question has four parts.

A student designed two spinners, Spinner X and Spinner Y. Each of the spinners is divided into congruent sections and labeled, as shown.



The student will spin the arrow on each spinner one time.

Part A

What is the probability that the arrow on Spinner X will stop on a section labeled “Red”?

Enter your answer in the space provided.

$\frac{1}{2}$

Part B

List all of the possible outcomes that can occur when the arrow on Spinner X and the arrow on Spinner Y are each spun one time.

Enter your list in the space provided.

Red 1, Red 2, Red 3, Blue 1, Blue 2, Blue 3.

Part C

What is the probability that the arrow on Spinner X will stop on a section labeled “Red” **and** the arrow on Spinner Y will stop on a section labeled with an odd number? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

The answer is $\frac{1}{3}$. I got this because half of the time, it will land on red, and after landing on red, it has a two-thirds chance of landing on an odd number. If you multiply $\frac{1}{2} \cdot \frac{2}{3} = \frac{2}{6}$, which equals $\frac{1}{3}$.

Part D

What is the probability that the arrow on Spinner X will stop on a section labeled “Red” **or** the arrow on Spinner Y will stop on a section labeled with an odd number? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

The answer is $\frac{3}{5}$. I got this because now that the question is "Red or an odd number," you just count all the favorable possibilities, 3, and put it over the total possibilities.

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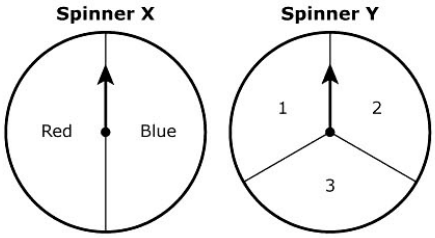
Score Point 2

This question has four parts.

A student designed two spinners, Spinner X and Spinner Y. Each of the spinners is divided into congruent sections and labeled, as shown.



The student will spin the arrow on each spinner one time.

Part A

What is the probability that the arrow on Spinner X will stop on a section labeled "Red"?

Enter your answer in the space provided.

50%

Part B

List all of the possible outcomes that can occur when the arrow on Spinner X and the arrow on Spinner Y are each spun one time.

Enter your list in the space provided.

red and 1
red and 2
red and 3
blue and 3
blue and 1
blue and 2

Part C

What is the probability that the arrow on Spinner X will stop on a section labeled "Red" **and** the arrow on Spinner Y will stop on a section labeled with an odd number? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

there is a 50% chance that spinner x will land on red because there are two halves and spinner y is cut into three parts and there are two odd numbers so i think that there is a 100% chance that spinner x will land on red and spinner y will land on an odd number.

Part D

What is the probability that the arrow on Spinner X will stop on a section labeled "Red" **or** the arrow on Spinner Y will stop on a section labeled with an odd number? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

i think there is a 50 50 chance because spinner x has two halves and there are two odd numbers on spinner y.

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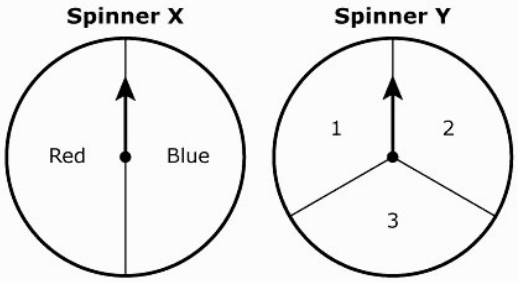
Score Point 1

This question has four parts.

A student designed two spinners, Spinner X and Spinner Y. Each of the spinners is divided into congruent sections and labeled, as shown.



The student will spin the arrow on each spinner one time.

Part A

What is the probability that the arrow on Spinner X will stop on a section labeled "Red"?

Enter your answer in the space provided.

50%

Part B

List all of the possible outcomes that can occur when the arrow on Spinner X and the arrow on Spinner Y are each spun one time.

Enter your list in the space provided.

There is a 50% chance that spiner X will land on red or blue. There is 33% chance that spinner Y will land on 1,2, or 3.

Part C

What is the probability that the arrow on Spinner X will stop on a section labeled "Red" **and** the arrow on Spinner Y will stop on a section labeled with an odd number? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

There is a 83% chance of this happening because $50 + 33 = 83$.

Part D

What is the probability that the arrow on Spinner X will stop on a section labeled "Red" **or** the arrow on Spinner Y will stop on a section labeled with an odd number? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

There is a 66% chance of this happening.

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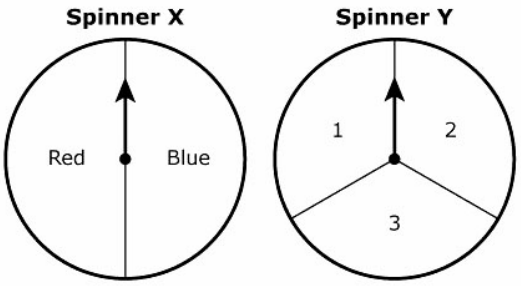
Score Point 0

This question has four parts.

A student designed two spinners, Spinner X and Spinner Y. Each of the spinners is divided into congruent sections and labeled, as shown.



The student will spin the arrow on each spinner one time.

Part A

What is the probability that the arrow on Spinner X will stop on a section labeled "Red"?

Enter your answer in the space provided.

5%

Part B

List all of the possible outcomes that can occur when the arrow on Spinner X and the arrow on Spinner Y are each spun one time.

Enter your list in the space provided.

spinner x can land on blue

spinner y could land on 3 or 1

Part C

What is the probability that the arrow on Spinner X will stop on a section labeled "Red" **and** the arrow on Spinner Y will stop on a section labeled with an odd number? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

i think 5 because if u add 3 and 2 it makes 5 so theres probably 5% chance that it will land on red and on an odd number.

Part D

What is the probability that the arrow on Spinner X will stop on a section labeled "Red" **or** the arrow on Spinner Y will stop on a section labeled with an odd number? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

5% because it could land on red or an odd number

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