

<b>Student Task</b>	Complete a table of probabilities and use the information to find the total number of counters in a bag. Analyze a probability game and design a money-making game of probability.
<b>Core Idea 2 Probability</b>	<b>Apply and deepen the understanding of theoretical and empirical probability.</b> <ul style="list-style-type: none"><li>• Represent all possible outcomes for a simple event in an organized way.</li><li>• Determine theoretical and experimental probabilities and use these to make predictions about events. (6<sup>th</sup> grade)</li><li>• Represent probabilities as ratios, proportions, decimals or percents. (6<sup>th</sup> grade)</li></ul>

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## Counters

This problem gives you the chance to:

- interpret probability information
  - solve a probability problem in context
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Gina has a bag containing Red, Green, Blue, Yellow and White counters.

If someone picks a counter without looking:

- the probability of picking a Red counter from the bag is one half
- the probability of picking a Green counter is half the probability of picking a Red counter
- Blue, Yellow and White counters have an equal probability of being picked

1. (a) Use this information to complete the table.

Show how you work out your answers.

Color	Red	Green	Blue	Yellow	White
Probability	$\frac{1}{2}$				

(b) There are 24 Green counters in the bag.

How many counters are there altogether in the bag? \_\_\_\_\_

Show how you figured it out.

2. Gina wants to raise funds at her school fair.

She plans to charge 10¢ to pick a counter from her bag without looking.

She will give:

20¢ to anyone who picks a Blue counter

50¢ to anyone who picks a Yellow counter

\$1 to anyone who picks a White counter

Anyone picking a Red counter or a Green counter will lose their money.

(a) Explain why Gina will lose money with this game.

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(b) How much should Gina charge to pick a counter so that she can make money from her game?

Explain your answer.

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(c) Explain how Gina can change her game so that she can still charge 10¢ and make money?

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Counters		Test 7 Rubric	
<p>The core elements of performance required by this task are:</p> <ul style="list-style-type: none"> <li>• interpret probability information</li> <li>• solve a probability problem in context</li> </ul> <p>Based on these, credit for specific aspects of performance should be assigned as follows</p>		points	section points
1 a	Shows work such as: $1/2 \times 1/2 = 1/4$ and $1/3 \times 1/4 = 1/12$	2	
	Gives correct answers: $1/4, 1/12, 1/12, 1/12$	2	
1 b	Gives correct answer: <b>96</b>	1	
	Shows correct work such as: 24 is $1/4$ of the total number of counters in the bag. $4 \times 24 =$	1	6
2 a	Gives correct explanation such as: In 12 tries, Gina charges \$1.20 but would expect to pay out $20¢ + 50¢ + \$1 = \$1.70$	2	
2 b	Gives a reasonable answer from 15¢ to 25¢.	1	
2 c	Gives a reasonable explanation such as: The sum of the payouts is less than or equal to \$1.20. <b>and</b> One payout is greater than or equal to 10¢.	1	4
<b>Total Points</b>			<b>10</b>