

Name: _____

Counters

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.

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

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

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