GRADE 7 · DATA, CHANCE AND RISK

Estimate a probability by running a simulation

NAME	DATE	SCORE / 10

1 A simulation models 3 free throws by a player who makes half of them, using 3 coin flips per trial. The tally shows the number made in each of 40 trials. Based on the simulation, what is the estimated probability of making at least 2 free throws? Write it as a fraction.

0 made 𝍸 |

1 made 𝍸 𝍸 𝍸

2 made 𝍸 𝍸 𝍸

3 made ||||

$\frac{\square}{\square}$

2 Flip 3 coins to model 3 free throws by a player who makes half of them, with heads for a free throw made. Do this 30 times, and make a tally of the number made in each trial on the chart below. Write the estimated probability of making exactly 2 free throws in the box.

0 made

1 made

2 made

3 made

$\frac{\square}{\square}$

3 A simulation models a family with 3 children by flipping 3 coins, with heads for a girl. The tally shows the number of girls in each of 40 trials. Based on the simulation, what is the estimated probability of no girls? Write it as a fraction.

0 girls	III
1 girl	𝍸 𝍸 𝍸 I
2 girls	𝍸 𝍸 𝍸
3 girls	𝍸 I

$\frac{\square}{\square}$

4 Roll a number cube 3 times to model buying 3 cereal boxes, where one box in six holds a gold prize, with a 6 for gold. Do this 30 times, and make a tally of the number of gold prizes in each trial on the chart below. Write the estimated probability of no gold prize in the box.

0 gold	
1 gold	
2 gold	
3 gold	

$\frac{\square}{\square}$

5 A simulation models buying 3 cereal boxes, where one box in six holds a gold prize. Each trial rolls a number cube 3 times, with a 6 for gold. The tally shows the number of gold prizes in each of 32 trials. Based on the simulation, what is the estimated probability of no gold prize? Write it as a fraction.

0 gold	𝍸 𝍸 𝍸 I
1 gold	𝍸 𝍸 III
2 gold	III
3 gold	

$\frac{\square}{\square}$

6 Flip 3 coins to model a family with 3 children, with heads for a girl. Do this 30 times, and make a tally of the number of girls in each trial on the chart below. Write the estimated probability of at least 2 girls in the box.

0 girls

1 girl

2 girls

3 girls

$\frac{\square}{\square}$

7 A simulation models a family with 3 children by flipping 3 coins, with heads for a girl. The tally shows the number of girls in each of 40 trials. Based on the simulation, what is the estimated probability of at least 2 girls? Write it as a fraction.

0 girls	𝍸 |
1 girl	𝍸 𝍸 ||||
2 girls	𝍸 𝍸 |||
3 girls	𝍸 ||

$\frac{\square}{\square}$

8 Flip 3 coins to model 3 free throws by a player who makes half of them, with heads for a free throw made. Do this 30 times, and make a tally of the number made in each trial on the chart below. Write the estimated probability of making at least 2 free throws in the box.

0 made

1 made

2 made

3 made

$\frac{\square}{\square}$

9 A simulation models a family with 3 children by flipping 3 coins, with heads for a girl. The tally shows the number of girls in each of 50 trials. Based on the simulation, what is the estimated probability of exactly 1 girl? Write it as a fraction.

0 girls	𝍸 ||
1 girl	𝍸 𝍸 𝍸 ||
2 girls	𝍸 𝍸 𝍸 |||
3 girls	𝍸 |||

$\frac{\square}{\square}$

10 Flip 3 coins to model a family with 3 children, with heads for a girl. Do this 30 times, and make a tally of the number of girls in each trial on the chart below. Write the estimated probability of no girls in the box.

0 girls

1 girl

2 girls

3 girls

$\frac{\square}{\square}$

ANSWER KEY · GRADE 7 · DATA, CHANCE AND RISK

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1 19/40

3 3/40

5 1/2

7 1/2

9 17/50

2 A drawing

0 made ||||

1 made ~~||||~~ ~~||||~~ |

2 made ~~||||~~ ~~||||~~ |

3 made ||||

What counts as right: 30 tally marks in all, one for each trial, in the four rows. The box shows the trials in the 2 made row over 30, read from the child's own tally (11/30 for the tally in this key). The results vary by chance, so any estimate that matches the child's own tally counts. Fewer than 30 trials, or the model's own chance written without running the trials, does not count.

4 A drawing

0 gold ~~||||~~ ~~||||~~ ~~||||~~ |||

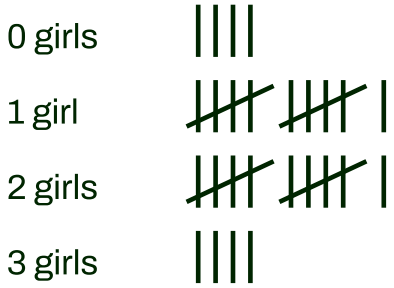
1 gold ~~||||~~ ~~||||~~

2 gold ||

3 gold

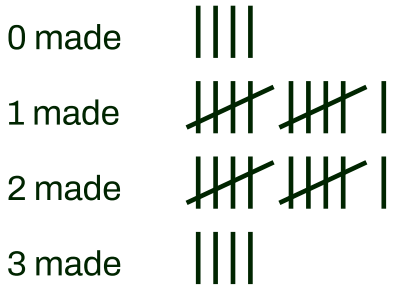
What counts as right: 30 tally marks in all, one for each trial, in the four rows. The box shows the trials in the 0 gold row over 30, read from the child's own tally (18/30 for the tally in this key). The results vary by chance, so any estimate that matches the child's own tally counts. Fewer than 30 trials, or the model's own chance written without running the trials, does not count.

6 A drawing



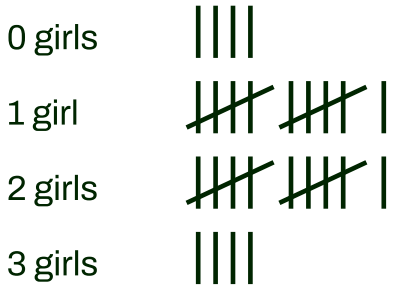
What counts as right: 30 tally marks in all, one for each trial, in the four rows. The box shows the trials in the 2 or 3 girls rows over 30, read from the child's own tally (15/30 for the tally in this key). The results vary by chance, so any estimate that matches the child's own tally counts. Fewer than 30 trials, or the model's own chance written without running the trials, does not count.

8 A drawing



What counts as right: 30 tally marks in all, one for each trial, in the four rows. The box shows the trials in the 2 or 3 made rows over 30, read from the child's own tally (15/30 for the tally in this key). The results vary by chance, so any estimate that matches the child's own tally counts. Fewer than 30 trials, or the model's own chance written without running the trials, does not count.

10 A drawing



What counts as right: 30 tally marks in all, one for each trial, in the four rows. The box shows the trials in the 0 girls row over 30, read from the child's own tally (4/30 for the tally in this key). The results vary by chance, so any estimate that matches the child's own tally counts. Fewer than 30 trials, or the model's own chance written without running the trials, does not count.