

Chance Builders

Build models and stories that match a probability.

GRADE 4 • 4.PS.2.e

4.PS.2.e "Create a model or contextual problem to represent a given probability."

NAME _____

DATE _____

MATCH THE PARTS

A probability shows favorable outcomes over all equal-likely outcomes. To build a model, make the total match the denominator and make the favorable part match the numerator. You can use equal spinner sections, cards, or objects in a bag.

WORKED EXAMPLE

Create a bag model for $P(\text{drawing a blue tile}) = 7/9$.

1. Use 9 tiles so the total matches the denominator.
2. Make 7 tiles blue so the favorable part matches the numerator.
3. Make the remaining tiles a different color, such as yellow.

Answer: A bag with 7 blue tiles and 2 yellow tiles.

PRACTICE 6 problems

- 1** Make a spinner model for $P(\text{landing on a heart}) = 1/4$. Describe the equal sections.

ANSWER _____

- 2** Make a bag model for $P(\text{drawing a green counter}) = 1/5$.

ANSWER _____

- 3** Make a card model for $P(\text{drawing a music card}) = 3/6$.

ANSWER _____

- 4** Write a snack-card situation to show $P(\text{choosing an apple card}) = 4/8$.

ANSWER _____

- 5** Make a spinner model for $P(\text{landing on red}) = 5/10$. Describe the equal sections.

ANSWER _____

- 6** Create a prize-coupon bag for $P(\text{drawing a comic coupon}) = 6/12$.

ANSWER _____

APPLY IT Show your work

- 1** The student council is making a prize wheel for a reading bingo event. They want $P(\text{landing on a bookmark prize}) = 1/6$. Describe a wheel model that works.

WORK SPACE

ANSWER _____

- 2** A video game club uses a mystery card bag. They want $P(\text{drawing a dragon card}) = 4/10$. Create a card-bag model and name the other kind of card.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Create a pair of different bag models that show $P(\text{drawing a blue counter}) = 3/6$. One model must have 6 counters. The other model must have a different total that is fewer than 13 counters. Explain why both models work.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Make a spinner model for $P(\text{landing on a heart}) = 1/4$. Describe the equal sections.	A spinner with 4 equal sections, 1 heart section and 3 star sections.
2	Make a bag model for $P(\text{drawing a green counter}) = 1/5$.	A bag with 5 counters, 1 green counter and 4 yellow counters.
3	Make a card model for $P(\text{drawing a music card}) = 3/6$.	A set of 6 cards, 3 music cards and 3 art cards.
4	Write a snack-card situation to show $P(\text{choosing an apple card}) = 4/8$.	A box has 8 cards. Four cards say apple, and 4 cards say banana. A card is chosen at random.
5	Make a spinner model for $P(\text{landing on red}) = 5/10$. Describe the equal sections.	A spinner with 10 equal sections, 5 red sections and 5 blue sections.
6	Create a prize-coupon bag for $P(\text{drawing a comic coupon}) = 6/12$.	A bag has 12 coupons, 6 comic coupons and 6 puzzle coupons.

PART 2 • APPLY IT

- A wheel with 6 equal sections, 1 bookmark section and 5 pencil sections.** Use 6 equal sections because the denominator is 6. Make 1 section a bookmark prize because the numerator is 1.
- A bag with 10 cards, 4 dragon cards and 6 robot cards.** The bag needs 10 equally likely cards in all. Four of them must be dragon cards, and the other 6 can be robot cards.

CHALLENGE

Model A has 6 counters, 3 blue and 3 red. Model B has 8 counters, 4 blue and 4 red. Both models give a $1/2$ chance of drawing blue, and $3/6$ is equal to $1/2$.

Accept any model or context with equally likely outcomes that has the stated favorable outcomes and total outcomes. Accept equivalent probability forms when the model still represents the given chance.