

Exercises

Communicate

- Why does a probability always have to be a number from 0 to 1 (or 0% to 100%)?
- What does it mean for an outcome to have a probability of 0?
- What does it mean for an outcome to have a probability of 1?
- Assign a probability to each of the following words:

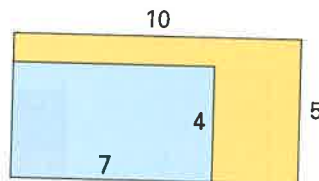
often	seldom	usually
never	maybe	frequently
sometimes	always	rarely

Rank the words in order from lowest probability to highest. Compare your list with those of your classmates. Which words do you agree on? Which words do you disagree on?

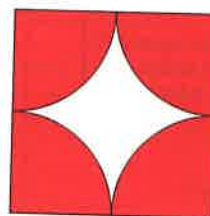
- In the Activity, how did your estimate of π from 20 tosses compare with the estimate of π from the total tosses for the entire class? How do you think you could improve your estimate of π ?

Guided Skills Practice

- Find the probability that a dart tossed at random will land in the blue area of the figure at right. (**EXAMPLE 1**)



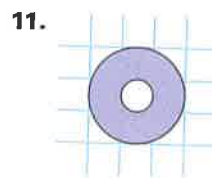
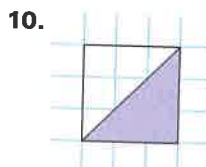
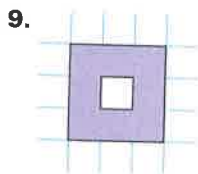
- If the area of the shaded region at right is π square units and the area of the square is 4 square units, what is the area of the unshaded region? What is the probability that a penny tossed onto a grid with squares equal to the width of a penny will *not* touch or cover an intersection? (**EXAMPLE 2**)



- Explain how you could use a grid with squares equal to the width of a penny to estimate π . (**ACTIVITY**)

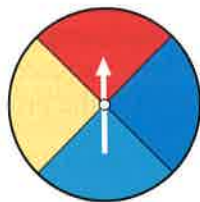
Practice and Apply

Find the probability that a dart tossed at random onto each figure will land in the shaded area.

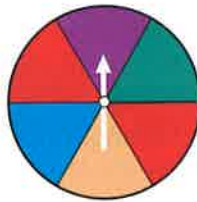


For each spinner below, find the theoretical probability that the arrow will land on red.

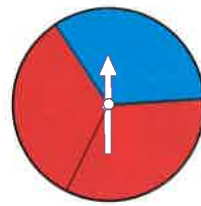
12.



13.



14.



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 for Exercises 15-23

PROBABILITY Convert each probability to a percent.

15. 0.75

16. $\frac{1}{4}$

17. $\frac{2}{3}$

PROBABILITY Convert each percent to a decimal probability.

18. 60%

19. 50%

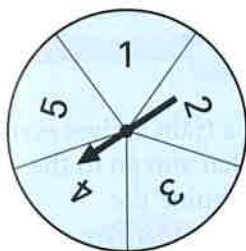
20. $33\frac{1}{3}\%$

PROBABILITY Convert each percent to a fractional probability. Write your answers in lowest terms.

21. 45%

22. 80%

23. $66\frac{2}{3}\%$



For Exercises 24–27, refer to the spinner shown at left.

24. What is the probability that the arrow will land on 5?
25. What is the probability that the arrow will land on an odd number?
26. What is the probability that the arrow will land on an even number?
27. Add your results from Exercises 25 and 26. What does this result represent in terms of probability?
28. Design a dartboard in which the probability of a dart landing in a red circle is 0.5.
29. Design a dartboard in which the probability of a dart landing in a red triangle is $\frac{1}{3}$.



CHALLENGE

In the dartboard shown at left, the radius of the inner circle is half of the radius of the outer circle.

30. What is the probability that a dart thrown at random will hit a red region?
31. What is the probability that a dart thrown at random will hit a black region?
32. What is the probability that a dart thrown at random will hit a white region?
33. The squares in the grid at right are exactly the width of a penny. What is the probability that the center of a penny tossed at random onto the grid will land within a white square, with no part of the penny touching an intersection?

