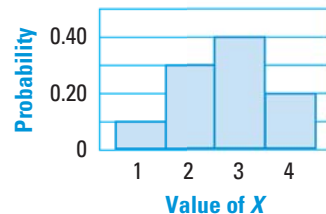


EXAMPLE 2

on p. 725
for Exs. 6–9

INTERPRETING PROBABILITY DISTRIBUTIONS In Exercises 6–9, use the given histogram of a probability distribution for a random variable X .



- What is the probability that X is equal to 1?
- What is the most likely value for X ?
- What is the probability that X is odd?
- TAKS REASONING** What is the probability that X is at least 3?
 (A) 0.2 (B) 0.4 (C) 0.6 (D) 0.8

EXAMPLES 3 and 4

on p. 726
for Exs. 10–32

CALCULATING PROBABILITIES Calculate the probability of tossing a coin 20 times and getting the given number of heads.

- | | | | |
|-------|--------|--------|--------|
| 10. 1 | 11. 2 | 12. 4 | 13. 6 |
| 14. 9 | 15. 12 | 16. 15 | 17. 18 |

BINOMIAL PROBABILITIES Calculate the probability of randomly guessing the given number of correct answers on a 30-question multiple choice exam that has choices A, B, C, and D for each question.

- | | | | |
|--------|--------|--------|--------|
| 18. 0 | 19. 2 | 20. 6 | 21. 11 |
| 22. 15 | 23. 21 | 24. 26 | 25. 30 |

ERROR ANALYSIS Describe and correct the error in calculating the probability of rolling a 1 exactly 3 times in 5 rolls of a six-sided die.

26.
$$P(k = 3) = {}_5C_3 \left(\frac{1}{6}\right)^{5-3} \left(\frac{5}{6}\right)^3 \approx 0.161$$
27.
$$P(k = 3) = \left(\frac{1}{6}\right)^3 \left(\frac{5}{6}\right)^{5-3} \approx 0.003$$

BINOMIAL DISTRIBUTIONS Calculate the probability of k successes for a binomial experiment consisting of n trials with probability p of success on each trial.

- | | |
|---------------------------------|-----------------------------------|
| 28. $k \leq 3, n = 7, p = 0.3$ | 29. $k \geq 5, n = 8, p = 0.6$ |
| 30. $k \leq 2, n = 5, p = 0.12$ | 31. $k \geq 10, n = 15, p = 0.75$ |
32. **TAKS REASONING** You perform a binomial experiment consisting of 10 trials with a probability of success of 36% on each trial. What is the most likely number of successes?
 (A) 3 (B) 4 (C) 6 (D) 7

EXAMPLE 5

on p. 727
for Exs. 33–38

HISTOGRAMS A binomial experiment consists of n trials with probability p of success on each trial. Draw a histogram of the binomial distribution that shows the probability of exactly k successes. Describe the distribution as either symmetric or skewed. Then find the most likely number of successes.

- | | | |
|-----------------------|------------------------|-----------------------|
| 33. $n = 3, p = 0.3$ | 34. $n = 6, p = 0.5$ | 35. $n = 4, p = 0.16$ |
| 36. $n = 7, p = 0.85$ | 37. $n = 8, p = 0.025$ | 38. $n = 12, p = 0.5$ |
39. **TAKS REASONING** Construct a symmetric probability distribution for a random variable X and a skewed probability distribution for a random variable Y . Make a table and a histogram for each distribution.