

LESSON
3-4**Practice B*****Dividing Polynomials*****Divide by using long division.**

1. $(x^2 - x - 6) \div (x - 3)$

2. $(2x^3 - 10x^2 + x - 5) \div (x - 5)$

3. $(-3x^2 + 20x - 12) \div (x - 6)$

4. $(3x^3 + 9x^2 - 14) \div (x + 3)$

Divide by using synthetic division.

5. $(3x^2 - 8x + 4) \div (x - 2)$

6. $(5x^2 - 4x + 12) \div (x + 3)$

7. $(9x^2 - 7x + 3) \div (x - 1)$

8. $(-6x^2 + 5x - 10) \div (x + 7)$

Use synthetic substitution to evaluate the polynomial for the given value.

9. $P(x) = 4x^2 - 9x + 2$ for $x = 3$

10. $P(x) = -3x^2 + 10x - 4$ for $x = -2$

Solve.

11. The total number of dollars donated each year to a small charitable organization has followed the trend $d(t) = 2t^3 + 10t^2 + 2000t + 10,000$, where d is dollars and t is the number of years since 1990. The total number of donors each year has followed the trend $p(t) = t^2 + 1000$. Write an expression describing the average number of dollars per donor.

lose an average of 2 cents for a \$1 bet on every game.

8. Possible answer: He could have changed the rules so that he rolls at least one pair of 6s in 25 (or more) rolls of a pair of dice. This makes his expected value positive.

Problem Solving

- $\frac{1}{6}$
 - $n = 5; r = 3; p = \frac{1}{6}; q = \frac{5}{6}$
 - $P(3) = {}_5C_3 \left(\frac{1}{6}\right)^3 \left(\frac{5}{6}\right)^2$
 - 0.032
- Find the sum of the probabilities of 1, 2, 3, 4, and 5 students buying a bag of trail mix, $P(1) + P(2) + P(3) + P(4) + P(5)$.
 - Find the probability that no student will buy a bag of trail mix and subtract that probability from 1.
 - 0.6
- 0.0008
- A 5. J

Reading Strategies

- $n = 2, p = \frac{1}{3}, q = \frac{2}{3}, r = 1$
 - $P(r) = {}_nC_r p^r q^{n-r}; P(1) = {}_2C_1 \left(\frac{1}{3}\right)^1 \left(\frac{2}{3}\right)^1$
 - ${}_2C_1 = 2$
 - $P(1) = \frac{4}{9} \approx 0.44$
- $n = 4, p = \frac{2}{5}, q = \frac{3}{5}, r = 2$
 - $P(r) = {}_nC_r p^r q^{n-r};$
 $P(2) = {}_4C_2 \left(\frac{2}{5}\right)^2 \left(\frac{3}{5}\right)^2$
 - ${}_4C_2 = 6$
 - $P(2) = \frac{216}{625} \approx 0.35$

3-4 DIVIDING POLYNOMIALS

Practice A

- $x + 5 + \frac{21}{x-3}$
- $3x - 3 - \frac{6}{x+2}$
- $2x^2 + 2x + \frac{x}{2x+1}$
- $2x^2 - 4x + 5$
- 1
 - 9
 - 46
 - 46
- $x + 9 + \frac{46}{x-5}$
- $x - 10 + \frac{26}{x+2}$
- $x + 7 + \frac{19}{x-3}$
- $P(4) = 5$
- $P(-3) = -4$

Practice B

- $x + 2$
- $2x^2 + 1$
- $-3x + 2$
- $3x^2 - \frac{14}{x+3}$
- $3x - 2$
- $5x - 19 + \frac{69}{x+3}$
- $9x + 2 + \frac{5}{x-1}$
- $-6x + 47 - \frac{339}{x+7}$
- $P(3) = 11$
- $P(-2) = -36$
- $2t + 10$

Practice C

- $x^2 + 5x - 12$
- $x^2 + 15x + 45 + \frac{131}{x-3}$
- $4x^3 + 9x^2 + 5 + \frac{9}{3x-1}$
- $-x^2 + 6x - 7$
- $9x + 51 + \frac{317}{x-6}$
- $3x^3 - 6x^2 + 10x - 20 + \frac{41}{x+2}$
- $6x^4 + 6x^3 + 6x^2 + 3x + 4 + \frac{2}{x-1}$