Oral Exercises

Divide.

1. $\frac{7x + 14}{7}$
2. $\frac{10y - 5}{5}$
3. $\frac{4u - 6v}{2}$
4. $\frac{14x - 28y + 21z}{7}$
5. $\frac{36m - 48mn}{6m}$
6. $\frac{22ab + 33b}{11b}$
7. $\frac{3c^2d - 12cd^2}{3cd}$
8. $\frac{2a^3b - 6a^2b^2 + 4ab^3}{2ab}$
9. $\frac{x^2y^2 + x^2y + xy^2}{xy}$

Find the greatest monomial factor. Then factor the given polynomial.

10. $4y^2 + 8y$
11. $15x^3 - 10x$
12. $ab^2 - a^2b$
13. $6pq + 9qr$
14. $\pi r^2 - 2\pi r$
15. $2x^2y^2 - 12xy$
16. $xy^2z^3 + x^3y^2z$
17. $uv^2r - u^2vs$

Written Exercises

Divide.

A

1. $\frac{6a + 9}{3}$
2. $\frac{4x - 6}{2}$
3. $\frac{24t - 12}{6}$
4. $\frac{21c + 35}{7}$
5. $\frac{9m - 18n}{9}$
6. $\frac{15a + 25b}{5}$
7. $\frac{12xy + 27y}{3y}$
8. $\frac{24mn - 16n}{8n}$
9. $\frac{10z^2 - 15z - 20}{5}$
10. $\frac{3x^2 - 12x - 18}{3}$
11. $\frac{33y^4 + 11y^3 - 44y^2}{11y}$
12. $\frac{4u^3 + 10u^2 - 6u}{2u}$
13. $\frac{8r^4 - 4r^3 - 6r^2}{-2r^2}$
14. $\frac{9m^5 + 12m^4 - 6m^3}{-m^3}$
15. $\frac{pq^3 - p^3q}{pq}$
16. $\frac{10a^2b - 15ab^2}{5ab}$
17. $\frac{x^2y - xy^2 - xy}{xy}$
18. $\frac{6c^3d - 12cd^3 - 15cd}{3cd}$
19. $\frac{28r^3s^2 + 42r^2s^3 - 56r^3s^3}{-7r^2s^2}$
20. $\frac{30p^4q - 45p^3q^2 + 15p^2q^3}{5p^2q}$

Evaluate by factoring first.

Sample $11^2 - 7 \cdot 11 = 11 \cdot 11 - 7 \cdot 11 = (11 - 7)11 = 4 \cdot 11 = 44$

21. $65 \cdot 3 + 65 \cdot 7$
22. $43 \cdot 13 - 43 \cdot 3$
23. $7 \cdot 19 - 3 \cdot 19 + 6 \cdot 19$
24. $7 \cdot 13 + 8 \cdot 13 + 5 \cdot 13$

25. $83^2 + 83 \cdot 17$

26. $2 \cdot 9 + 9^2$

27. $13^2 - 5 \cdot 13 + 2 \cdot 13$

28. $12 \cdot 13 - 60 + 12^2$

29. $7^2 - 28 + 7 \cdot 17$

30. $11^2 - 6 \cdot 11 + 5 \cdot 11$

Factor.

31. $15a - 25b + 20$

32. $18x - 12y + 36$

33. $6x^2 + 10x$

34. $14c^3 - 21c$

35. $6p^2q - 9pq$

36. $2a^2b^2 + 10ab$

37. $7y^3 - 21y^2 - 14y$

38. $22y^4 - 33y^3 + 11y^2$

B

39. $6ab^2 - 8a^2b$

40. $4x^2y - 16xy^2$

41. $-15x^2y^2 - 6xy^2$

42. $-16x^3y - 24x^4y^3$

43. $5ax^2 + 10a^2x - 15a^3$

44. $14p^3q^3 - 21p^2q^2 + 35pq$

45. $48a^3b^2 + 72a^2b^3$

46. $77r^7s^7 - 84r^8s^4$

47. $96wx^3y^2z^2 - 144w^3xy^2z^2$

48. $84ab^2c^3d^4 + 126a^4b^3c^2$

Simplify.

Sample

$$\frac{15x - 25y}{5} - \frac{14x - 21y}{7} = (3x - 5y) - (2x - 3y)$$
$$= 3x - 5y - 2x + 3y$$
$$= x - 2y \quad \textit{Answer}$$

49. $\frac{4a - 6}{2} + \frac{3a + 6}{3}$

50. $\frac{14x - 21}{7} - \frac{10x - 25}{5}$

51. $\frac{6p + 9q}{3} - \frac{7p + 21q}{7}$

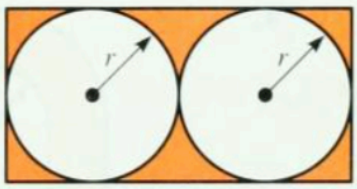
52. $\frac{a^2b + 2ab^2}{ab} - \frac{2ab - b^2}{b}$

53. $\frac{x^2y - 3x^2y^2}{xy} + \frac{6xy + 9xy^2}{3y}$

54. $\frac{a^3b^4 - a^4b^3}{a^2b^3} - \frac{a^3b^2 - a^2b^3}{a^2b}$

Problems

Sample Write an expression in factored form for the area A of the shaded region.



Solution The length of the rectangle equals the length of four radii ($4r$), and the width equals the length of two radii ($2r$).

A = Area of the rectangle − (2 × area of a circle)
$= (4r \cdot 2r) - 2\pi r^2$
$= 2r^2(4 - \pi)$ ***Answer***