

Solve.

1. Angela earned \$85 doing chores. She put $\frac{3}{5}$ of the money in savings. She then spent $\frac{1}{2}$ the remaining money on shoes. How much money does she have left to spend?

2. I invited 6 people to a party, including me. I had 10 pieces of cake. How much did each person get if everyone got a fair share? Draw a diagram to support your answer.

3. My mom then got home with 9 more pieces of cake. We shared these equally too. How much cake did each person get this time? Draw a diagram to support your answer.

Evaluate.

4. $(3 \cdot 2)^2$
 $3^2 \cdot 2^2$
 $9 \cdot 4$
 36

5. $(4x^3)^4$
 $4^4 x^{12}$
 $256x^{12}$

6. $5^2 \cdot 5^{-5}$
 $\frac{5^2}{5^5} = \frac{1}{5^3} = \frac{1}{125}$

7. $(\frac{1}{3})^3$
 $(\frac{1}{3})(\frac{1}{3})(\frac{1}{3})$
 $= \frac{1}{27}$

Simplify

8. $2m^2 \cdot 3m^5$
 $6m^7$

9. $3j^3k^{-2} \cdot 3j^{-2}k^4$
 $\frac{3j^3 \cdot 3k^4}{k^2 j^2} = 9jk^2$

10. $(x^3z^5)^0$
 1

11. $(3ab^2)^2$
 $3^2 a^2 b^4$
 $9a^2b^4$

2. $(5w^3)^{-2}$
 $\frac{1}{(5w^3)^2} = \frac{1}{5^2 w^6} = \frac{1}{25w^6}$

13. $\frac{r^3}{r^{-2}}$
 $r^3 r^2 = r^5$

14. $\frac{3a^4b^{-4}c^{-3}}{5a^2b^{-3}c^4}$
 $\frac{3a^4 b^3 c^4 c^3}{5a^2 b^4 c^4 c^3} = \frac{3a^2}{5b c^7}$

15. $\frac{2jk^{-2}m^3}{2km}$
 $\frac{2jm^3}{2k^2 km} = \frac{jm^2}{k^3}$

Evaluate.

16. $\sqrt{28}$
 $2 \cdot 2 \cdot 7$
 $2\sqrt{7}$

17. $\sqrt[3]{-27}$
 $(-3)(-3)(-3)$
 -3

18. $\sqrt[4]{64}$
 $2 \cdot 2 \cdot 2 \cdot 2$
 $2\sqrt{2}$

19. $\sqrt[4]{243v^6}$
 $3 \cdot 3 \cdot 3 \cdot 3 \cdot 3$
 $3\sqrt[4]{3v^2}$

20. $\sqrt[3]{5^3}$
 555
 5

Simplify.

21. $\sqrt{8x^4}$
 $2 \cdot 2 \cdot 2 \cdot x \cdot x \cdot x \cdot x$
 $2 \cdot x \cdot x \sqrt{2} = 2x^2\sqrt{2}$

22. $\sqrt[3]{64m^7n}$
 $2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot m \cdot m \cdot m \cdot m \cdot m \cdot n$
 $4m^2\sqrt[3]{n^2}$

23. $\sqrt[5]{-32x^6y^{10}z}$
 $-2xy^2\sqrt[5]{xz}$

24. $\sqrt[6]{448x^7y^8}$
 $2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 7 \cdot x^7 \cdot y^8$
 $2xy\sqrt[6]{7xy^2}$

Evaluate without a calculator. Write in radical form, then simplify.

25. $9^{\frac{1}{2}}$
 $\sqrt{9}$
 3

26. $16^{\frac{3}{4}}$
 $\sqrt[4]{16^3}$
 $2 \cdot 2 \cdot 2 \cdot 2$
 8

27. $8^{\frac{1}{3}}$
 $\sqrt[3]{8^{-1}}$
 $\frac{1}{8^{\frac{1}{3}}}$
 $\frac{1}{2}$

28. $32^{\frac{2}{5}}$
 $\sqrt[5]{32^2}$
 4

29. $27^{\frac{4}{3}}$
 $\sqrt[3]{27^4}$
 $3 \cdot 3 \cdot 3$
 $\frac{1}{3^4} = \frac{1}{81}$

Simplify. Leave answers with rational exponents and use only positive exponents.

30. $x^{\frac{1}{2}} \cdot x^{\frac{3}{2}}$
 $x^{\frac{3}{2} + \frac{1}{2}} = x^2$

31. $y^2 \cdot y^{\frac{1}{2}}$
 $y^{\frac{4}{2} + \frac{1}{2}} = y^{\frac{5}{2}}$

32. $w^{\frac{2}{5}} \cdot w^{\frac{3}{5}}$
 $w^{\frac{2}{5} + \frac{3}{5}} = w^1 = w$

33. $(j^{-10})^{\frac{1}{4}}$
 $j^{-\frac{10}{4}} = j^{-\frac{5}{2}}$
 $\frac{1}{j^{\frac{5}{2}}}$

34. $(m^{\frac{3}{5}})^{\frac{5}{3}}$
 $m^{\frac{15}{15}} = m$

35. $(x^{\frac{1}{2}} y^{\frac{2}{3}})^{-6}$
 $x^{-3} y^{-4}$

36. $\frac{k^7}{k^7}$
 $k^{\frac{7}{7} - \frac{7}{7}} = k^0 = 1$

37. $\frac{k^{\frac{6}{3}}}{k^{\frac{2}{3}}}$
 $k^{\frac{6}{3} - \frac{2}{3}} = k^{\frac{4}{3}}$

38. $\frac{x^4 y^{\frac{1}{3}}}{x^{\frac{3}{2}} y^3}$
 $\frac{x^{\frac{8}{2}} y^{\frac{1}{3}}}{x^{\frac{3}{2}} y^{\frac{6}{2}}} = \frac{x^{\frac{8}{2} - \frac{3}{2}} y^{\frac{1}{3} - \frac{6}{2}}}{1} = \frac{x^{\frac{5}{2}} y^{-\frac{11}{3}}}{1} = \frac{x^{\frac{5}{2}}}{y^{\frac{11}{3}}}$

39. $\frac{a^{\frac{5}{2}} b^{\frac{3}{2}}}{a^2 b^4}$
 $a^{\frac{5}{2} - 2} b^{\frac{3}{2} - 4} = a^{\frac{1}{2}} b^{-\frac{5}{2}} = \frac{a^{\frac{1}{2}}}{b^{\frac{5}{2}}}$