

4.5**Practice**

For use with pages 193–198

Find the product or quotient. Write your answer using exponents.

1. $5^{10} \cdot 5^{11}$

2. $4^8 \cdot 4^9$

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

4. $8^2 \cdot 8^{14} \cdot 8^3$

5. $9^{12} \cdot 9^{13}$

6. $10^7 \cdot 10^{13}$

7. $\frac{3^{16}}{3^8}$

8. $\frac{7^{20}}{7^{14}}$

9. $\frac{11^{19}}{11^{15}}$

10. $\frac{13^5}{13^2}$

11. $\frac{16^8}{16^5}$

12. $\frac{20^9}{20^7}$

Simplify.

13. $d^4 \cdot d^4$

14. $3h^5 \cdot 4h^6$

15. $5g^2 \cdot g^{16}$

16. $8e^9 \cdot 7e^{10}$

17. $9w^3 \cdot 2w^4 \cdot w^2$

18. $5v^6 \cdot 2v^4 \cdot 2v^3$

19. $\frac{x^{15}}{x^9}$

20. $\frac{9y^{18}}{15y^2}$

21. $\frac{12s^9}{32s^2}$

22. $\frac{15z^{11}}{18z^7}$

23. $\frac{30a^5 \cdot a^3}{12a}$

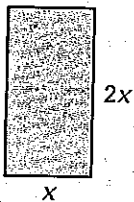
24. $\frac{6h^{11} \cdot 7h^6}{28h^3}$

Practice

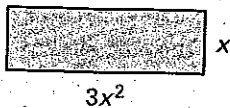
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Find the area of the rectangle.

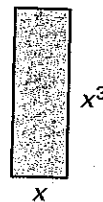
25.



26.



27.



28. A file on the hard drive of a computer is 3^2 kilobytes. Another file is 3^7 kilobytes. How many times larger is the second file than the first file? Write your answer using an exponent.

Find the missing exponent.

29. $u^{22} \cdot u^{18} = u^?$

30. $d^? \cdot d^{13} = d^{24}$

31. $f^8 \cdot f^? = f^{33}$

32. $\frac{x^{29}}{x^9} = x^?$

33. $\frac{m^?}{m^9} = m^{15}$

34. $\frac{r^{31}}{r^?} = r^{17}$