

KEY

7-2 Multiplying Powers With the Same Base

Simplify each expression completely. Leave your answer in fraction form, if necessary. (1 pt each)

1. $x^7 \cdot x^{-1} = \boxed{x^6}$

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

3. $2z^3 \cdot z^{-4} \cdot 5z^4$
 $= (2 \cdot 5)(z^{3-4+4})$
 $= \boxed{10z^3}$

4. $(-2a^3)(-a)$
 $= -2(-1)(a^{3+1})$
 $= \boxed{2a^4}$

5. $(4b^{-2})(-2b^{-3})$
 $= 4(-2)(b^{-2-3})$
 $= -8b^{-5} = \boxed{\frac{-8}{b^5}}$

6. $(-5h^{-3})(-2h^{-4})$
 $= -5(-2)(h^{-3-4})$
 $= 10h^{-7} = \boxed{\frac{10}{h^7}}$

7. Simplify each expression. Write your answer in scientific notation.

a. $(7 \times 10^{-2})(2 \times 10^5)$
 $= (7 \times 2)(10^{-2+5})$
 $= 14 \times 10^3$
 $= \boxed{1.4 \times 10^4}$

b. $(0.1 \times 10^7)(0.3 \times 10^8)$
 $= (0.1 \times 0.3)(10^{7+8})$
 $= 0.03 \times 10^{15}$
 $= \boxed{3 \times 10^{13}}$

8. A gallon of water contains about 12.7×10^{25} molecules. The Mississippi River discharges about 2.69×10^7 gal every minute. About how many molecules is this?

$$(12.7 \times 10^{25})(2.69 \times 10^7)$$
$$= (12.7 \times 2.69)(10^{25+7})$$
$$= 34.163 \times 10^{32}$$
$$= 3.4163 \times 10^{33}$$

(2)

The Mississippi River discharges about 3.4163×10^{33} molecules every minute.