

Math Sheet

Name _____ Score _____ / 15 Teacher _____ Date _____

Multiplying Monomials

Simplify each monomial expression. State any nonzero restrictions.

1. $(y^5 z^{-3})^3 \times 9yz^{-4}$

2. $-4p^{-1} \times p^{-2}$

3. $(y^2)^{-3}$

4. $-6p^{-4} \times 3p^4$

5. $(3m^2 x^{-4})^1 \times -5m^4 x^{-4}$

6. $-8m^{-5} y^2 \times m^{-4}$

7. $(m^2 y^{-4})^3$

8. $(m^2 x^{-5})^{-2} \times -6x^{-3}$

9. $(n^2)^3 \times (5n^{-4})^{-3}$

10. $-9m^{-5} y^4 \times 3m^{-5}$

11. $(5m^{-3} n^3)^2 \times (n)^{-2}$

12. $(m^5 n^{-3})^{-1} \times n^{-3}$

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Multiplying Monomials

Simplify each monomial expression. State any nonzero restrictions.

13. $6 \times (x^2 \times -6x^{-3})^1$

14. $(-4m^{-2}p)^{-1} \times m^{-5}$

15. $(3m^{-1}x)^1 \times (-8x^5)^{-3}$

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Multiplying Monomials

Answer key

Simplify each monomial expression. State any nonzero restrictions.

1. $(y^5 z^{-3})^3 \times 9yz^{-4}$

Coefficient

$$(1)^3 \times 9 = 9$$

Exponents y

$$5 \times 3 + 1 = 16$$

Exponents z

$$((-3) \times 3) + (-4) = -13$$

Answer

$$9y^{16}z^{-13}$$

Restriction: z must not be 0

2. $-4p^{-1} \times p^{-2}$

Coefficient

$$-4 \times 1 = -4$$

Exponents p

$$(-1) + (-2) = -3$$

Answer

$$-4p^{-3}$$

Restriction: p must not be 0

3. $(y^2)^{-3}$

Coefficient

$$(1)^{-3} = 1$$

Exponents y

$$(2 \times (-3)) = -6$$

Answer

$$y^{-6}$$

Restriction: y must not be 0

4. $-6p^{-4} \times 3p^4$

Coefficient

$$-6 \times 3 = -18$$

Exponents p

$$(-4) + 4 = 0$$

Answer

$$-18$$

Restriction: p must not be 0

5. $(3m^2 x^{-4})^1 \times -5m^4 x^{-4}$

Coefficient

$$(3)^1 \times -5 = -15$$

Exponents x

$$(-4) + (-4) = -8$$

Exponents m

$$2 + 4 = 6$$

Answer

$$-15m^6 x^{-8}$$

Restriction: x must not be 0

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Answer key

Simplify each monomial expression. State any nonzero restrictions.

6. $-8m^{-5}y^2 \times m^{-4}$

Coefficient

$$-8 \times 1 = -8$$

Exponents y

$$2 = 2$$

Exponents m

$$(-5) + (-4) = -9$$

Answer

$$-8m^{-9}y^2$$

Restriction: m must not be 0

7. $(m^2y^{-4})^3$

Coefficient

$$(1)^3 = 1$$

Exponents y

$$((-4) \times 3) = -12$$

Exponents m

$$2 \times 3 = 6$$

Answer

$$m^6y^{-12}$$

Restriction: y must not be 0

8. $(m^2x^{-5})^{-2} \times -6x^{-3}$

Coefficient

$$(1)^{-2} \times -6 = -6$$

Exponents x

$$(-5) \times (-2) + (-3) = 7$$

Exponents m

$$(2 \times (-2)) = -4$$

Answer

$$-6m^{-4}x^7$$

Restriction: m, x must not be 0

9. $(n^2)^3 \times (5n^{-4})^{-3}$

Coefficient

$$(1)^3 \times (5)^{-3} = \frac{1}{125}$$

Exponents n

$$2 \times 3 + (-4) \times (-3) = 18$$

Answer

$$\frac{1}{125}n^{18}$$

Restriction: n must not be 0

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Simplify each monomial expression. State any nonzero restrictions.

10. $-9m^{-5}y^4 \times 3m^{-5}$

Coefficient

$$-9 \times 3 = -27$$

Exponents y

$$4 = 4$$

Exponents m

$$(-5) + (-5) = -10$$

Answer

$$-27m^{-10}y^4$$

Restriction: m must not be 0

11. $(5m^{-3}n^3)^2 \times (n)^{-2}$

Coefficient

$$(5)^2 \times (1)^{-2} = 25$$

Exponents m

$$((-3) \times 2) = -6$$

Exponents n

$$3 \times 2 + (1 \times (-2)) = 4$$

Answer

$$25m^{-6}n^4$$

Restriction: m, n must not be 0

12. $(m^5n^{-3})^{-1} \times n^{-3}$

Coefficient

$$(1)^{-1} \times 1 = 1$$

Exponents m

$$(5 \times (-1)) = -5$$

Exponents n

$$(-3) \times (-1) + (-3) = 0$$

Answer

$$m^{-5}$$

Restriction: m, n must not be 0

13. $6 \times (x^2 \times -6x^{-3})^1$

Coefficient

$$6 \times (1 \times -6)^1 = -36$$

Exponents x

$$2 + (-3) = -1$$

Answer

$$-36x^{-1}$$

Restriction: x must not be 0

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Answer key

Simplify each monomial expression. State any nonzero restrictions.

14. $(-4m^{-2}p)^{-1} \times m^{-5}$

Coefficient

$$(-4)^{-1} \times 1 = -\frac{1}{4}$$

Exponents m

$$(-2) \times (-1) + (-5) = -3$$

Exponents p

$$(1 \times (-1)) = -1$$

Answer

$$-\frac{1}{4}m^{-3}p^{-1}$$

Restriction: m, p must not be 0

15. $(3m^{-1}x)^1 \times (-8x^5)^{-3}$

Coefficient

$$(3)^1 \times (-8)^{-3} = -\frac{3}{512}$$

Exponents x

$$1 + (5 \times (-3)) = -14$$

Exponents m

$$(-1) = -1$$

Answer

$$-\frac{3}{512}m^{-1}x^{-14}$$

Restriction: m, x must not be 0