

Algebra 2B

9.4 Multiplying & Dividing Rational Expressions

Day 3 - Practice

Name: Key

Date/Pd: _____

$$1. \frac{4xy^3 \cdot x}{x^2y \cdot 8x}$$

$$\boxed{\frac{y^3}{2x^2}}$$

$$5. \frac{2x-10}{x+1} \cdot \frac{x+2}{3x^2-15}$$

$$\frac{2(x-5)}{x+1} \cdot \frac{x+2}{3(x^2-5)} = \boxed{\frac{2(x-5)(x+2)}{3(x+1)(x^2-5)}}$$

*Nothing to cancel

$$2. \frac{32x^3y \div 8x^4}{y^9 \div y^6}$$

$$\frac{(32x^3y)(y^6)}{8x^4y^9} = \frac{32x^3y^7}{8x^4y^9}$$

$$\boxed{\frac{4}{xy^2}}$$

$$6. \frac{x-3}{2x-8} \cdot \frac{6x^2-96}{x^2-9}$$

$$\frac{(x-3)(6)(x^2-16)}{2(x-4)(x-3)(x+3)}$$

$$\frac{3(x-3)(x-4)(x+4)}{2(x-4)(x-3)(x+3)} = \boxed{\frac{3(x+4)}{x+3}}$$

$$3. \frac{80x^4}{y^3} \cdot \frac{xy}{5x^2}$$

$$\frac{80x^4 \cdot xy}{y^3 \cdot 5x^2} = \frac{16x^3}{y^2}$$

$$\boxed{\frac{16x^3}{y^2}}$$

$$x^2+x-6$$

$$(x+3)(x-2)$$

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

$$7. \frac{3x^2+x-2}{x^2+3x+2} \div \frac{2x}{x+2}$$

$$\frac{(x+1)(3x-2)(x+2)}{(2x)(x+1)(x+2)}$$

$$\boxed{\frac{3x-2}{2x}}$$

$$4. \frac{2xyz}{x^2y^2} \div \frac{6y^3}{3xz}$$

$$\frac{2z^2 \cdot xz}{xy^2 \cdot 2y^3}$$

$$\boxed{\frac{z^2}{y^4}}$$

* reduced both fractions before doing anything

$$8. \frac{x^2-14x+48}{x^2-6x} \div (3x-24)$$

$$\frac{(x-8)(x-6)}{x(x-6)(3)(x-8)}$$

$$\boxed{\frac{1}{3x}}$$

$$9. \frac{x^2-x-6}{x^3+1} \cdot \frac{x+1}{x^2+5x+6}$$

$$\frac{(x-3)(x+2) \cdot \cancel{(x+1)}}{\cancel{(x+1)}(x^2+x+1) \cdot \cancel{(x+3)(x+2)}}$$

$$\boxed{\frac{x-3}{(x^2+x+1)(x+3)}}$$

$$10. \frac{2x^2-2}{x^2-6x-7} \cdot (x^2-10x+21)$$

$$\frac{2(x^2-1)(x-7)(x-3)}{(x-7)(x+1) \cdot 1}$$

$$\frac{2(x-1)\cancel{(x+1)}(x-7)(x-3)}{\cancel{(x-7)}\cancel{(x+1)}}$$

$$\boxed{2(x-1)(x-3)}$$

$$11. \frac{x^3+5x^2-(x-5)}{x^2-25} \cdot (x+1)$$

$$\frac{x^2(x+5)-1(x+5)}{(x^2-1)(x+5)}$$

$$\frac{(x-1)\cancel{(x+1)}(x+5)(x+1)}{\cancel{(x-5)}\cancel{(x+5)}}$$

$$\boxed{\frac{(x-1)(x+1)^2}{(x-5)}}$$

$$12. \frac{x-3}{-x^3+3x^2} \cdot (x^2+2x+1)$$

$$\frac{(x-3)(x+1)^2}{x^2(-x+3)}$$

*Tricky!
factor out
a negative

$$\frac{\cancel{(x-3)}(x+1)^2}{-x^2\cancel{(x-3)}}$$

$$\boxed{\frac{-(x+1)^2}{x^2}}$$

$$13. \frac{2x^2-12x}{x^2-7x+6} \div \frac{2x}{3x-3}$$

$$\frac{(2x^2-12x)(3x-3)}{(x^2-7x+6)(2x)}$$

$$\frac{\cancel{2x}(x-6)(3)\cancel{(x-1)}}{\cancel{(x-1)}(x-6)(2x)}$$

$$\boxed{3}$$

$$14. \frac{x^2+8x+16}{x+2} \div \frac{x^2+6x+8}{x^2-4}$$

$$\frac{(x+4)\cancel{(x-2)}(x+2)}{(x+2)\cancel{(x+4)}(x+2)}$$

$$\boxed{\frac{(x+4)(x-2)}{(x+2)}}$$

$$15. \frac{x^2+6x-7}{3x^2} \div \frac{x+7}{6x}$$

$$\frac{\cancel{(x+7)}(x-1)\cancel{(6x)}}{\cancel{(x+7)}(3x^2)}$$

$$\boxed{\frac{2(x-1)}{x}}$$

$$16. (x^2+6x-27) \div \frac{3x^2+27x}{x+5}$$

$$\frac{\cancel{(x+9)}(x-3)}{1} \cdot \frac{(x+5)}{3x\cancel{(x+9)}}$$

$$\boxed{\frac{(x-3)(x+5)}{3x}}$$

$$17. (x-5) \div \frac{x^2-11x+30}{x^2+7x+12} \cdot (x-6)$$

$$\frac{\cancel{(x-5)} \cdot \cancel{(x-5)}(x+3)(x+4)}{1 \cdot \cancel{(x-5)}(x-6)}$$

$$\boxed{(x+3)(x+4)}$$

42
1 42
2 21
3 14

$$20. \frac{2x^2+x-15}{2x^2-11x-21} \cdot (6x+9) \div \frac{2x-5}{3x-21}$$

$$\frac{\cancel{(x-7)}(x^2+x-30)}{1 \cdot \cancel{(x-7)}(x+6)(x-3)}$$

side
x divide

$$(x+3)(2x-5)$$

$$(x-14/2)(x+3/2)$$

$$(x-7)(2x+3)$$

$$\frac{(2x^2+x-15)(6x+9)(3x-21)}{(2x^2-11x-21)(2x-5)}$$

$$\frac{(x+3)(2x-5)(3)(x+3)(3)(x-7)}{(x-7)(2x+3)(2x-5)}$$

$$\frac{9(x+3)(x-5)(x+3)(x-7)}{(x-7)(2x+3)(2x-5)}$$

$$\frac{9(x+3)(x-5)(x+3)(x-7)}{(x-7)(2x+3)(2x-5)}$$

$$\boxed{9(x+3)}$$

$$21. (x^3+8) \cdot \frac{x-2}{x^2-2x+4} \div \frac{x^2-4}{x-6}$$

$$\frac{\cancel{(x+2)}(x^2-2x+4)(x-2)(x-6)}{(x^2-2x+4)(x-2)(x+2)}$$

$$\frac{(x-6)}{(x-2)(x+2)}$$

$$\boxed{x-6}$$

$$18. \frac{x^2-x-12}{8x^2} \div \frac{x^3+3x^2}{8x^3-2x^2} \div \frac{4x-1}{x+2}$$

$$\frac{(x-4)(x+3)(x^2)(4x-1)(x+2)}{8x^2(x^2)(x+3)(4x-1)}$$

$$\frac{\cancel{2x^2}(x+2)(x-4)}{8x^2}$$

$$\frac{(x+2)(x-4)}{4x^2}$$

$$19. \frac{x^2+11x}{x-2} \div (3x^2+6x) \cdot \frac{x^2-4}{x+11}$$

$$\frac{(x^2+11x)(x^2-4)}{(x-2)(3x^2+6x)(x+11)}$$

$$\frac{x(x+11)(x-2)(x+2)}{(x-2)(3x)(x+2)(x+11)}$$

$$\frac{x(x+11)(x-2)(x+2)}{(x-2)(3x)(x+2)(x+11)}$$

$$\frac{x(x+11)(x-2)(x+2)}{(x-2)(3x)(x+2)(x+11)}$$

$$\boxed{\frac{1}{3}}$$

$$22. \frac{x^2+12x+20}{4x^2-9} \cdot \frac{6x^3-9x^2}{x^3+10x^2} \cdot (2x+3)$$

$$\frac{(x+10)(x+2)(3x^2)(2x-3)(2x+3)}{(2x-3)(2x+3)(x^2)(x+10)}$$

$$\frac{3(x+2)}{(x+10)}$$

$$\boxed{3(x+2)}$$

