LESSON MAKER PRO

Factor Link

Turn a sum into a product.

GRADE 8 · MA.8.AR.1.3

MA.8.AR.1.3 "Rewrite the sum of two algebraic expressions having a common monomial factor as a common factor multiplied by the sum of two algebraic expressions."

NAME _____ DATE _____

FIND THE SHARED FACTOR

Find the greatest monomial that divides both terms. Divide each term by that factor, then place the quotients inside parentheses.

WORKED EXAMPLE

Rewrite 11x + 22 as a common factor multiplied by a sum.

1. Both terms have a common factor of 11.
2. 11x / 11 = x, and 22 / 11 = 2.
3. Write the common factor outside the parentheses: 11(x + 2).

Answer: 11(x + 2)

PRACTICE 6 problems

1 Rewrite 6x + 18 as a common factor multiplied by a sum.

ANSWER _____

2 Rewrite 9x + 36 as a common factor multiplied by a sum.

ANSWER _____

3 Rewrite $8x^4 + 40x$ as a common factor multiplied by a sum.

ANSWER _____

4 Rewrite $12x^4 + 48x$ as a common factor multiplied by a sum.

ANSWER _____

5 Rewrite $15x^5 + 60x$ as a common factor multiplied by a sum.

ANSWER _____

6 Rewrite $35x^5 + 140x$ as a common factor multiplied by a sum.

ANSWER _____

APPLY IT Show your work

1 For a gaming event, a club collects 18x dollars in entry fees and 54 dollars from snack sales. Write the total, 18x + 54, as a common factor multiplied by a sum.

WORK SPACE

ANSWER _____

2 A skateboard fundraiser earns 25x dollars from custom sticker orders and 75 dollars from donations. Write the total, 25x + 75, as a common factor multiplied by a sum.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Rewrite $36x^4 + 12x$ by factoring out the greatest common monomial factor. Then explain why your factor is greatest.

WORK SPACE AND ANSWER

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Rewrite 6x + 18 as a common factor multiplied by a sum.	**6(x + 3)**
2	Rewrite 9x + 36 as a common factor multiplied by a sum.	**9(x + 4)**
3	Rewrite $8x^4 + 40x$ as a common factor multiplied by a sum.	**$8x(x^3 + 5)$**
4	Rewrite $12x^4 + 48x$ as a common factor multiplied by a sum.	**$12x(x^3 + 4)$**
5	Rewrite $15x^5 + 60x$ as a common factor multiplied by a sum.	**$15x(x^4 + 4)$**
6	Rewrite $35x^5 + 140x$ as a common factor multiplied by a sum.	**$35x(x^4 + 4)$**

PART 2 · APPLY IT

1. **18(x + 3)** The greatest common monomial factor of 18x and 54 is 18. Divide each term by 18 to get x and 3.
2. **25(x + 3)** The greatest common monomial factor of 25x and 75 is 25. Divide each term by 25 to get x and 3.

CHALLENGE

$12x(3x^3 + 1)$. The factor 12x divides both original terms, and no larger monomial divides both.

Accept algebraically equivalent products with the factors in either order. For the challenge, the factor must be 12x because the prompt asks for the greatest common monomial factor.