

Highest Common Factor.

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Differentiate and Assess

Not every student will be ready to investigate this concept at this Level and so we will need to differentiate to ensure every student is learning at their leading edge. Select the Differentiate button on this screen.

Integrate

Every mathematical concept is integrally related to other mathematical concepts. Teaching and learning related concepts simultaneously develops deep relational understanding. Select the Integrate button on this screen.

Intervene

Some students may not yet be ready to investigate this concept at any Level, and so we will need to provide some intervention. Select the Intervention button on this screen.

HIGHEST COMMON FACTOR.

EXPLICIT TEACHING PLAN OVERVIEW PAGE

THIS PAGE IS A SUMMARY OF THE EXPLICIT TEACHING PLAN, INCLUDING STRATEGIC QUESTIONS, AND DESCRIBING THE SEQUENCE WHICH WILL OCCUR OVER MULTIPLE LESSONS.

RESOURCES: PLAYING CARDS,PENCIL, PAPER

WHAT COULD WE DO?

Children:

- multiply 2 numbers together to make a product, for example, $4 \times 3 = 12$
- identify 4 and 3 as factors of 12
- find the factors of 12, for example, factors of 12 = 1, 2, 3, 4, 6, 12
- find the factors of 15, for example, factors of 15 = 1, 3, 5, 15
- identify the common factors of 12 and 15, for example, common factors of 12 and 15 = 1, 3
- identify the highest common factor of 12 and 15, for example, highest common factor of 12 and 15 = 3

WHAT LANGUAGE COULD WE USE TO EXPLAIN AND ASK QUESTIONS?

Children

- ask one another questions about highest common factors, for example:
 - ▶ How could we multiply 3 and 4 to make a product?
 - ▶ What is the product of 3 and 4?
 - ▶ What are the numbers that we multiply called?
 - ▶ Are numbers that we multiply called factors?
 - ▶ What numbers are the factors of 12?
 - ▶ What numbers are the factors of 15
 - ▶ What are the common factors of 12 and 15?
- What is the highest common factor of 12 and 15?

HIGHEST COMMON FACTOR.

EXPLICIT TEACHING PLAN

FULL EXPLICIT TEACHING PLAN, EMBEDDING DEEP RELATIONAL UNDERSTANDING, METALANGUAGE, AND QUESTIONS THAT MAY BE USED OVER MULTIPLE LESSONS.

WHAT COULD WE DO?

Children think about, talk and listen to a friend about, then have the opportunity to share what they already know.

Record, for example, factors

Record, for example, factor: a number that can be multiplied to get another number

Record, for example, $4 \times 3 = 12$

Record, for example, 4 is a factor of 12.

Record, for example, 3 is a factor of 12.

Record, for example, $2 \times 6 = 12$

Record, for example, 2 is a factor of 12.

Record, for example, 6 is a factor of 12.

WHAT LANGUAGE COULD WE USE TO EXPLAIN AND ASK QUESTIONS?

- ▶ Today brings an investigation about highest common factors.
- ▶ What do you know about highest common factors?
- ▶ Talk about highest common factors with a friend.
- ▶ Is anyone ready to share what they are thinking about highest common factors?

- ▶ We've investigated multiplication.
- ▶ And we found that we can multiply 2 numbers together to make a product.
- ▶ **The numbers that we multiply together are called factors.**

- ▶ If we multiply 4 times 3, we get 12 as our product.
- ▶ The factors that we multiplied together are 4 and 3.
- ▶ So 4 and 3 are factors of 12.

- ▶ What other numbers could we multiply together to make 12?
- ▶ Could we multiply 2 times 6 to make 12?
- ▶ Are 2 and 6 factors of 12?

Record, for example, $1 \times 12 = 12$

Record, for example, 1 is a factor of 12.

Record, for example, 12 is a factor of 12.

Record, for example, factors of 12 = 1, 12, 2, 6, 3, 4

Record, for example, $3 \times 5 = 15$

Record, for example, 3 and 5 are factors of 15.

Record, for example, $1 \times 15 = 15$

Record, for example, 1 and 15 are factors of 15.

Record, for example, factors of 15 = 1, 15, 3, 5

Record, for example, common factors

- ▶ What other numbers could we multiply together to make 12?
- ▶ Could we multiply 1 times 12 to make 12?
- ▶ Are 1 and 12 factors of 12?

- ▶ Are there any other numbers that multiply together to make 12?

- ▶ Could we record the factors of 12 in a list?

- ▶ What numbers multiply together to make 15?
- ▶ Does 3 times 5 equal 15?
- ▶ Are 3 and 5 factors of 15?

- ▶ Does 1 times 15 equal 15?
- ▶ Are 1 and 15 factors of 15?

- ▶ Could we record the factors of 15 in a list?

- ▶ We have found the factors of 12 and the factors of 15.
- ▶ What do you think common factors are?
- ▶ The word common, means it happens to more than one number.
- ▶ **So a common factor is a factor of more than 1 number.**

Record the factors of 12 and the factors of 15, for example,

Factors of 12 = 1, 12, 2, 6, 3, 4

Factors of 15 = 1, 15, 3, 5

Point to each factor, circling each common factor of 12 and 15, for example,

Factors of 12 = ①, 12, 2, 6, 3, 4

Factors of 15 = ①, 15, 3, 5

Factors of 12 = ①, 12, 2, 6, ③, 4

Factors of 15 = ①, 15, ③, 5

Record the common factors of 12 and 15, for example,

- ▶ Let's look at our factors of 12 and our factors of 15.
- ▶ Are there any factors of 12 that are also factors of 15?
- ▶ Are there any factors that are common to both 12 and 15?

- ▶ Is 1 a common factor of 12 and 15?
- ▶ Yes, 1 is a common factor of 12 and 15.
- ▶ Let's circle the 1s.
- ▶ Is 12 a common factor of 12 and 15?
- ▶ No, 12 is not a common factor of 12 and 15.
- ▶ Is 2 a common factor of 12 and 15?
- ▶ No, 2 is not a common factor of 12 and 15.
- ▶ Is 6 a common factor of 12 and 15?
- ▶ No, 6 is not a common factor of 12 and 15.
- ▶ Is 3 a common factor of 12 and 15?
- ▶ Yes, 3 is a common factor of 12 and 15.
- ▶ Let's circle the 3s.
- ▶ Is 4 a common factor of 12 and 15?
- ▶ No, 4 is not a common factor of 12 and 15.
- ▶ Is 5 a common factor of 12 and 15?
- ▶ No, 5 is not a common factor of 12 and 15.

- ▶ So what are the common factors of 12 and 15?
- ▶ Are 1 and 3 the common factors of 12 and 15?

Common factors of 12 and 15 = 1, 3

Record, for example, highest common factor

Record the highest common factor of 12 and 15, for example,

Highest common factor of 12 and 15 = 3

► So we have found the common factors of 12 and 15.

► **Which common factor is the highest?**

► The common factors of 12 and 15 are 1 and 3.

► Which factor is higher, 1 or 3?

► Is 3 the highest common factor of 12 and 15?