

PRIME AND COMPOSITE NUMBERS, SIMPLIFY CALCULATIONS.

INVESTIGATIONS OVERVIEW PAGE

THIS PAGE IS A SUMMARY OF THE INVESTIGATIONS THAT STUDENTS MAY ENGAGE IN TO DEEPEN THEIR RELATIONAL UNDERSTANDING. INVESTIGATIONS WITH INSTRUCTIONS TO STUDENTS FOLLOW ON SUBSEQUENT PAGES.

These investigations and reflections are directly linked to Explicit Teaching

- In pairs, children select cards to make numbers to identify whether they are prime or composite. *Reflection: What are prime and composite numbers?*
- In pairs, children have a hundred chart. They systematically cross out composite numbers, identifying that they are multiples of prime numbers. They identify the prime numbers to 100. Extension: Continue past 100. Extension 2: Investigate prime numbers on the internet, identifying the largest prime number that mathematicians have found to date. *Reflection: What are prime and composite numbers?*
- In pairs, children select cards to make numbers to identify whether they are prime or composite. They find the prime factors of composite numbers. They record the composite numbers as products of the prime factors. *Reflection: How are composite numbers products of prime numbers?*
- In pairs, children use cards to create **single-digit numbers to multiply using prime factors**, for example, 8×7 . Children multiply **using the prime factors**, for example, $2 \times 2 \times 2 \times 7$. Children calculate the product. *Reflection: How can we use prime factors to simplify multiplication?*
- In pairs, children use cards to create **a two-digit number and a single-digit number to multiply using prime factors**, for example, 56×6 . Children multiply **using the prime factors of one or both of the numbers**, for example, $56 \times 3 \times 2$ or $7 \times 8 \times 3 \times 2$. Children calculate the product. *Reflection: How can we use prime factors to simplify multiplication?*
- In pairs, children use cards to create **2 two-digit numbers to multiply using prime factors**, for example, 55×24 . Children multiply **using the prime factors of one or both numbers**, for example, $55 \times 2 \times 2 \times 2 \times 3$ or $5 \times 11 \times 2 \times 2 \times 2 \times 3$. Children calculate the product. *Reflection: How can we use prime factors to simplify multiplication?*
- In pairs, children use cards to create **a two-digit number and a single-digit number to divide using prime factors**, for example, $86 \div 6$. Children divide **using the prime factors of the dividend**, for example, $86 \div 2 \div 3$. Children calculate the quotient. *Reflection: How can we use prime factors to simplify division?*
- In pairs, children use cards to create **a three-digit number and a single-digit number to divide using prime factors**, for example, $176 \div 4$. Children divide **using the prime factors of the dividend**, for example, $176 \div 2 \div 2$. Children calculate the quotient. *Reflection: How can we use prime factors to simplify division?*

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Prime and Composite Numbers, Simplify Calculations

Select cards to make numbers to identify whether they are prime or composite.

Reflection: What are prime and composite numbers?

Prime and Composite Numbers, Simplify Calculations

Have a hundred chart.

Systematically cross out composite numbers that are multiples of prime numbers.

Identify the prime numbers to 100.

Extension 1: Continue past 100.

Extension 2: Investigate prime numbers on the internet, identifying the largest prime number that mathematicians have found to date.

Reflection: What are prime and composite numbers?

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Prime and Composite Numbers, Simplify Calculations

Select cards to make numbers to identify whether they are prime or composite.

Find the prime factors of composite numbers.

Record the composite numbers as products of the prime factors.

Reflection: How are composite numbers products of prime numbers?

Prime and Composite Numbers, Simplify Calculations

Use cards to create **single-digit numbers to multiply using prime factors**, for example, 8×7 .

Multiply **using the prime factors**, for example, $2 \times 2 \times 2 \times 7$.

Calculate the product.

Reflection: How can we use prime factors to simplify multiplication?

Prime and Composite Numbers, Simplify Calculations

Use cards to create a **two-digit number** and a **single-digit number** to multiply using **prime factors**, for example, 56×6 .

Multiply **using the prime factors of one or both of the numbers**, for example,

$$56 \times 3 \times 2 \quad \text{or}$$

$$7 \times 8 \times 3 \times 2.$$

Calculate the product.

Reflection: How can we use prime factors to simplify multiplication?

Prime and Composite Numbers, Simplify Calculations

Use cards to create **2 two-digit numbers to multiply using prime factors**, for example, 55 x 24.

Multiply **using the prime factors of one or both numbers**, for example,

$$55 \times 2 \times 2 \times 2 \times 3 \quad \text{or}$$

$$5 \times 11 \times 2 \times 2 \times 2 \times 3.$$

Calculate the product.

Reflection: How can we use prime factors to simplify multiplication?

Prime and Composite Numbers, Simplify Calculations

Use cards to create a **two-digit number** and a **single-digit number** to divide using **prime factors**, for example, $86 \div 6$.

Divide **using the prime factors of the dividend**, for example, $86 \div 2 \div 3$.

Calculate the quotient.

Reflection: How can we use prime factors to simplify division?

Prime and Composite Numbers, Simplify Calculations

Use cards to create a **three-digit number** and a **single-digit number to divide using prime factors**, for example, $176 \div 4$.

Divide **using the prime factors of the dividend**, for example, $176 \div 2 \div 2$.

Calculate the quotient.

Reflection: How can we use prime factors to simplify division?