$5 \times 7 = 35$

$20 + 2 = 22$

Factors and Multiples

Information

Common core icons

This icon indicates a slide where the Standards for Mathematical Practice are being developed. Details of these are given in the Notes field.

MODELING

Slides containing examples of mathematical modeling are marked with this stamp.

This icon indicates an opportunity for discussion or group work.

The **Standards for Mathematical Practice** outlined in the Common Core State Standards for Mathematics describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

These are:

1) **Make sense of problems and persevere in solving them.**

2) **Reason abstractly and quantitatively.**

3) **Construct viable arguments and critique the reasoning of others.**

4) **Model with mathematics.**

5) **Use appropriate tools strategically.**

6) **Attend to precision.**

7) **Look for and make use of structure.**

8) **Look for and express regularity in repeated reasoning.**

This icon indicates that the slide contains activities created in Flash. These activities are not editable.

This icon indicates teacher's notes in the Notes field.

A **factor** divides a number exactly, without leaving a remainder.
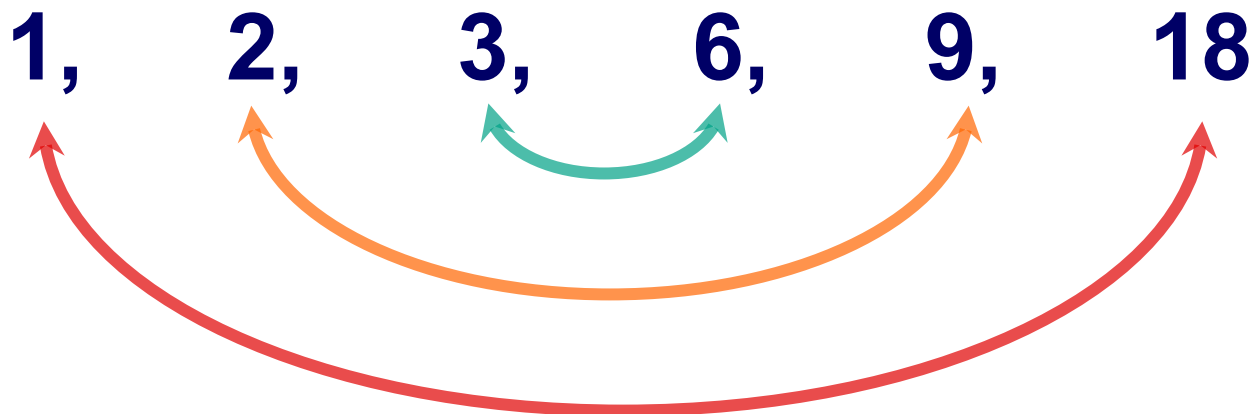
Let's think about the number **18**.

Does **1** go into 18? How many times?
How about **2**, **3**, **4** and **5**?
Do any other numbers go into 18?

Can you answer Alex's questions?

The numbers **1**, **2**, **3**, **6**, **9** and **18** go into 18.
These are the **factors** of 18.

Factors come in **pairs**. Let's look at the factors of **18** again:

1,   2,   3,   6,   9,   18

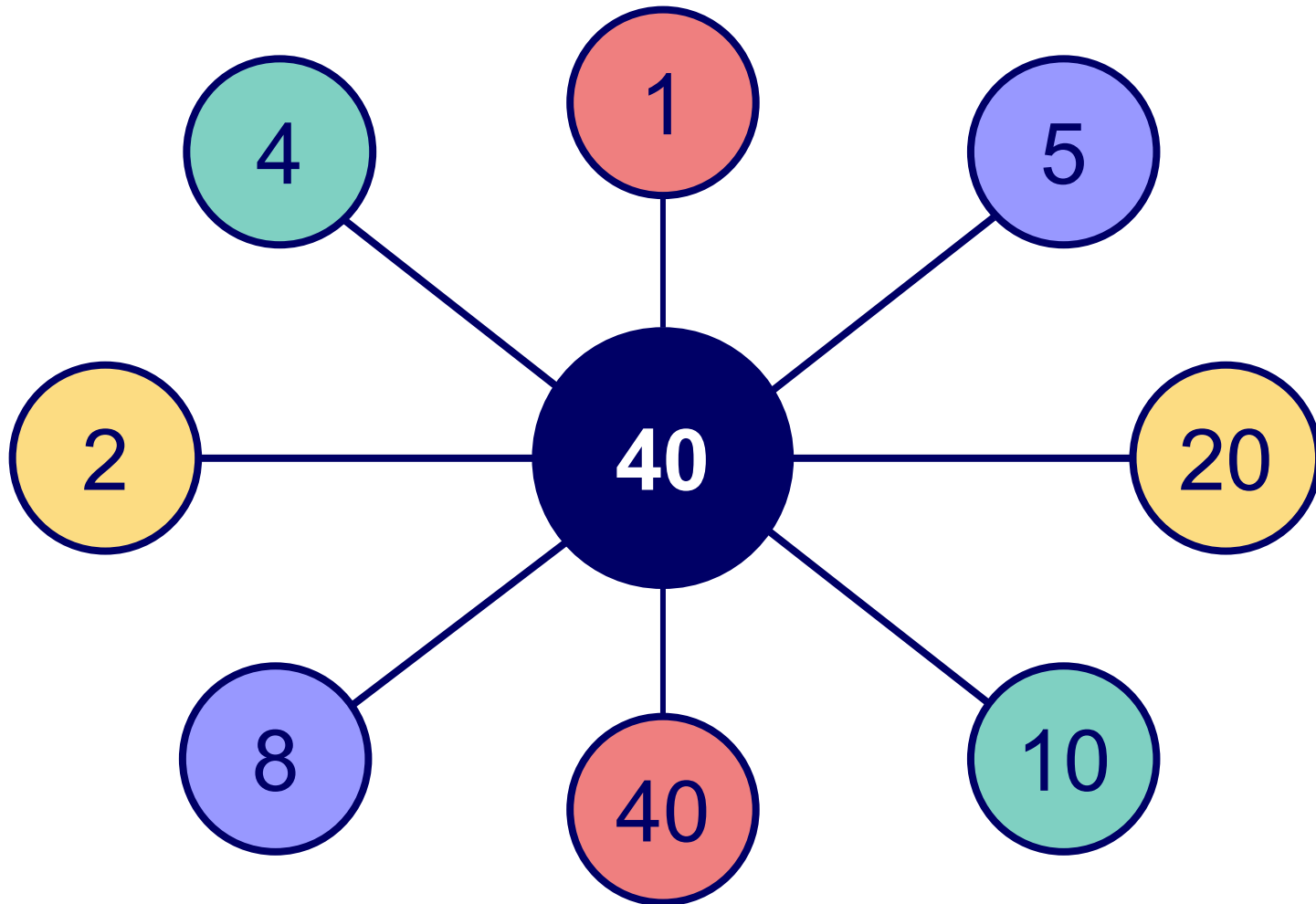**1 × 18 = 18**   **2 × 9 = 18**   **3 × 6 = 18**

18 has 6 factors, or 3 **factor pairs**.

Can you find the factor pairs of 40?

Factor diagrams

Can you find the **factor pairs** of the number in the yellow circle?

5

Press the number in the yellow circle to reveal the factor pairs. Press the blue arrows to adjust the number in the yellow circle.

Press **start** to begin.

start

Drag the factors to the correct orange circles.

| 12 | 28 | 45 | 77 |

1 2 3 4 5 6 7 8 9 10

11 12 14 15 28 36 45 51 77 84

You might have noticed that some numbers have fewer factors than others. In fact, some only have **two** factors!

Let's think about the number 7. What are its factors?

1 and 7

When a number only has two factors, **1 and itself**, we call it a **prime number**.

7 is a prime number. Can you think of any other examples?

Are these numbers prime or composite?

Can you use the grid to figure out whether these numbers are prime?
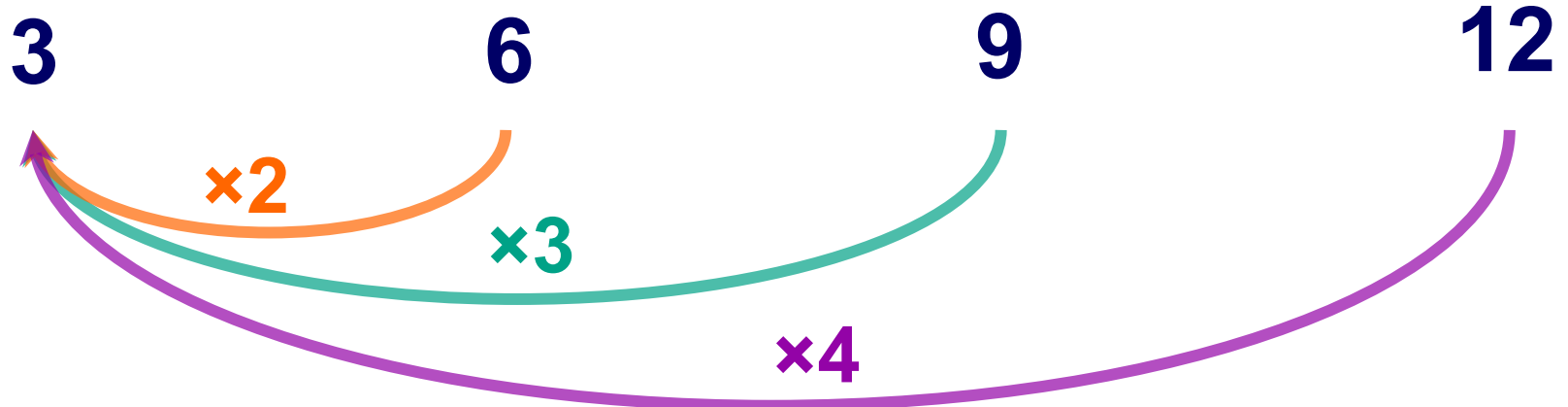
Press on each square to highlight it. Use the squares to build rectangles of different sizes to figure out whether each number is prime.

Press **start** to begin.

start

When we multiply one number by another number, we say that the answer is a **multiple** of the original number.

3   **6**   **9**   **12**

×2

×3

×4

6, 9 and 12 are all **multiples** of 3.
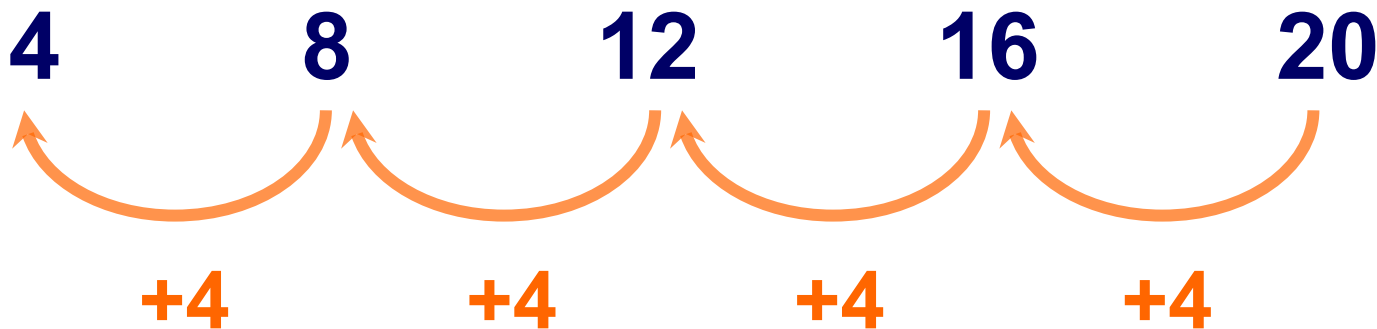
Finding multiples

Let's find multiples of 4! How can we do it?

We can find multiples of a number by **skip counting** with that number!

Can you remember how to skip count?

4   **8**   **12**   **16**   **20**

+4   **+4**   **+4**   **+4**

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

clear all

multiples □

Factors and multiples are related to each other!

Here are the factors of 10:

10   **1**   **2**   **5**   **10**

×10   ×5   ×2   ×1
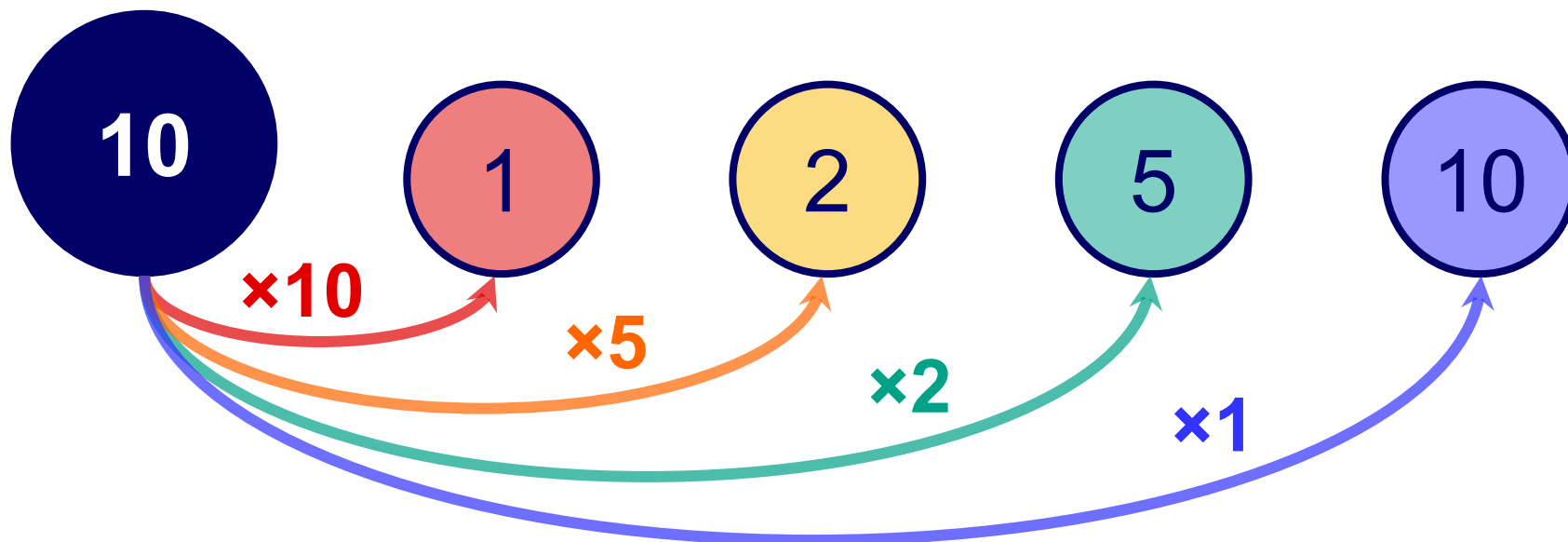
We can say that 10 is a **multiple** of each of its **factors**.

Drag the multiples to the correct red circles.

2 **3** **5** **6**

8 9 10 14 17 18 20 24 27 29

30 33 38 41 45 52 54 60 77 84

Nicole wants her classmates to guess the number she is thinking of. She decides to give them four clues.

- The number is between 1–100.

- The number has 4 **factors**.

- The number is a **multiple** of 23.

- Both **digits** in the largest factor are multiples of 2.

Can you guess Nicole's number?

Factors and multiples summary

A **facto**r ...

numbe...

A **mult**i...

numbe...

Let's see what you can remember about **factors** and **multiples**!

Complete these sentences by dragging the words into the correct places.

Press **start** to begin.

start

smaller   divides   multiplying   bigger