Unit 3 · Properties and Fact Strategies Cheat Sheet

Unit 3 focus: the commutative, associative and distributive properties

1 Big Idea

Properties let you change a hard fact into easier ones. Turn factors around, regroup them, or break one factor into parts.

2 Important Vocabulary

commutative property	You can change the order of factors and the product stays the same.	$3 \times 7 = 7 \times 3$
associative property	You can change how factors are grouped and the product stays the same.	$(2 \times 5) \times 4 = 2 \times (5 \times 4)$
distributive property	Break a factor into parts, multiply each part, and add.	$6 \times 8 = (6 \times 5) + (6 \times 3)$
known fact	A fact you already know by heart.	$10 \times 4 = 40$ helps with 9×4

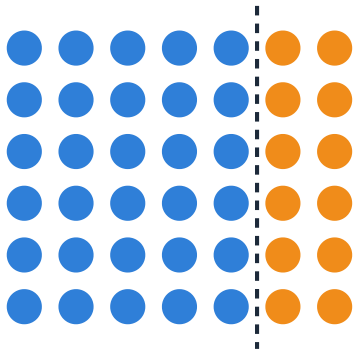
3 How It Works

Find 7×6 by breaking 7 into $5 + 2$.

Example: $7 \times 6 = (5 \times 6) + (2 \times 6)$
$5 \times 6 =$ 30
$2 \times 6 =$ 12
Add: $30 + 12 = 42$

Answer: 42

4 Visual Model



A 6 by 7 array split into 6×5 and 6×2: $30 + 12 = 42$.

5 ★ Remember This · Watch Out!

★ Remember this

- Order of factors does not matter: $3 \times 8 = 8 \times 3$.
- Look for a 10: $5 \times 7 \times 2 = 10 \times 7$.

⚠ Watch out!

- **Multiply both parts:** $6 \times 7 = (6 \times 5) + (6 \times 2)$, not $(6 \times 5) + 2$
- **Division order:** the commutative property is for multiplication only

6 Try It!

1. $(2 \times 3) \times 5 = 2 \times (3 \times ___)$
   Answer: 5
2. $8 \times 7 = (8 \times 5) + (8 \times ___)$
   Answer: 2

Answers are printed upside down. Turn the page to check!

Unit 3 · Properties and Fact Strategies Cheat Sheet

More practice: facts with 0 and 1 and strategies for every fact to 10 × 10

1 Big Idea

Any number times 0 is 0, and any number times 1 is itself. Use facts you know to build facts you do not know.

2 Important Vocabulary

identity property	Any number times 1 is that number.	9 × 1 = 9
zero property	Any number times 0 is 0.	9 × 0 = 0
double	Multiply by 2, or add a number to itself.	double 7 is 14
strategy	A plan or way to solve a problem.	Use 5 × 8 to find 6 × 8

3 How It Works

Find 9 × 8 using a 10s fact.

Example: 9 × 8 = (10 × 8) − 8
10 × 8 = 80
Take away one 8: 80 − 8 = 72

Answer: 72

4 Visual Model

×	1	2	3	4	5	6	7	8	9
1	1	2	3	**4**	5	6	7	**8**	9
2	2	4	6	**8**	10	12	14	**16**	18
3	3	6	9	**12**	15	18	21	**24**	27
4	4	8	12	**16**	20	24	28	**32**	36
5	5	10	15	**20**	25	30	35	**40**	45
6	6	12	18	**24**	30	36	42	**48**	54
7	7	14	21	**28**	35	42	49	**56**	63
8	8	16	24	**32**	40	48	56	**64**	72
9	9	18	27	**36**	45	54	63	**72**	81

The 8s column is double the 4s column.

5 ★ Remember This · Watch Out!

★ Remember this

- × 4: double, then double again.
- × 6: 5 groups plus 1 more group.
- × 9: 10 groups minus 1 group.

⚠ Watch out!

- **7 × 0 = 7?:** No! 7 × 0 = 0.
- **0 ÷ 5 vs 5 ÷ 0:** 0 ÷ 5 = 0, but you cannot divide by 0

6 Try It!

1. 6 × 7 = ?
   Answer: 42
2. 4 × 9 = ? (double 2 × 9)
   Answer: 36

Answers are printed upside down. Turn the page to check!