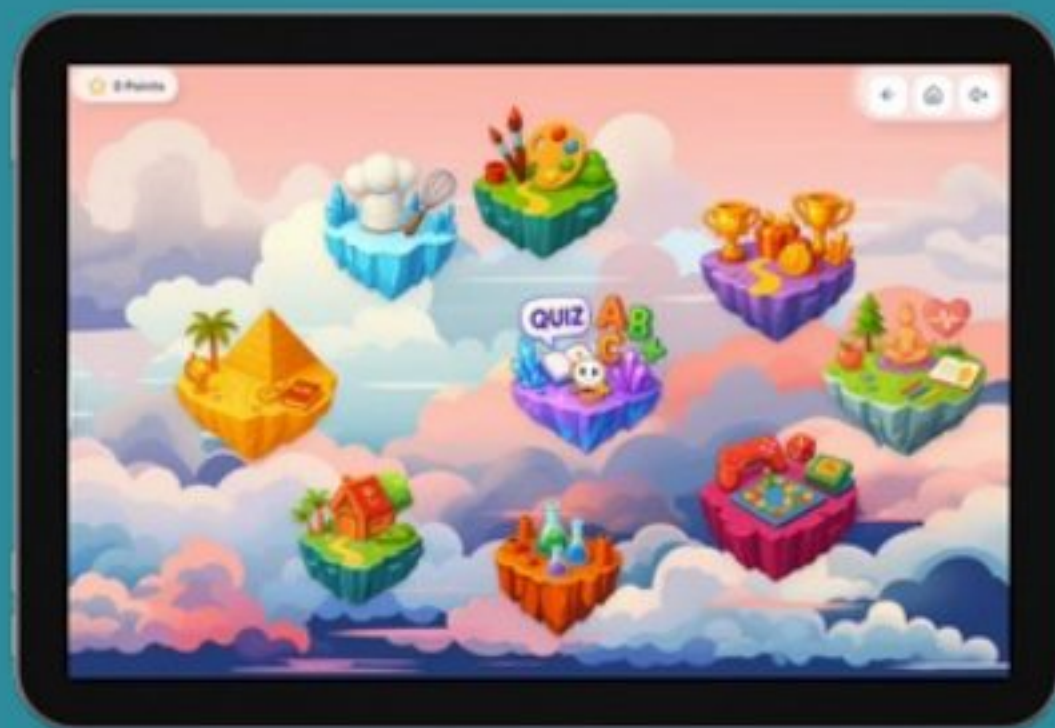




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Pre-Algebra - Year 5

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Solving $\times$ $\div$ $+$

Missing Numbers

1. Find the operation.


$$7 \times _ = 56$$

Look at the equation and work out which operation is being used.

2. Use the inverse operation.



Do the opposite operation to find the missing number.

3. Check your answer.



Put the number back into the equation to make sure it works.

Example:


$$7 \times _ = 56$$



$$56 \div 7 = 8$$



So,

$$7 \times 8 = 56$$





Inverse Operation Warm-Up



Name: _____

Use the inverse operation to find each missing number. Show your quick check where you can.

A. Fill the missing number

1. $6 \times \underline{\quad} = 42$

2. $\underline{\quad} \times 8 = 56$

3. $63 \div \underline{\quad} = 9$

4. $\underline{\quad} \div 8 = 7$

5. $12 + \underline{\quad} = 37$

6. $\underline{\quad} - 19 = 46$

B. Write the inverse equation

7. $9 \times \underline{\quad} = 72$

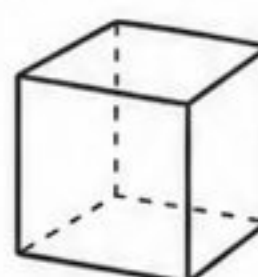
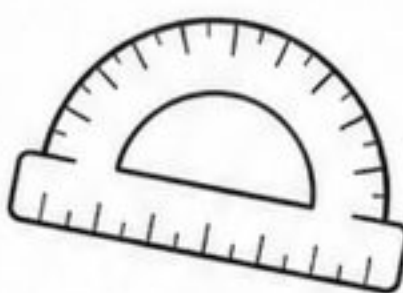
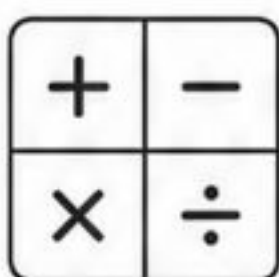
Inverse: _____

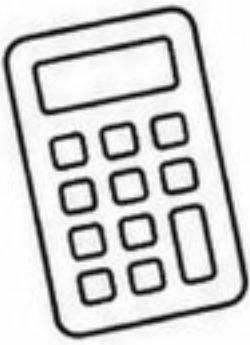
8. $\underline{\quad} + 28 = 65$

Inverse: _____

C. Explain

9. How can inverse operations help you check a missing-number equation?





Inverse Operation Warm-Up



Name: ANSWERS

Use the inverse operation to find each missing number. Show your quick check where you can.

A. Fill the missing number

1. $6 \times \underline{\quad} = 42$

7

2. $\underline{\quad} \times 8 = 56$

7

3. $63 \div \underline{\quad} = 9$

7

4. $\underline{\quad} \div 8 = 6$

48

5. $12 + \underline{\quad} = 37$

25

6. $\underline{\quad} - 19 = 46$

65

B. Write the inverse equation

7. $9 \times \underline{8} = 72$

Inverse:

$72 \div 9 = 8$

8. $\underline{36} + 28 = 64$

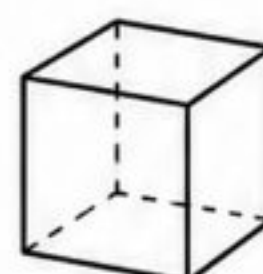
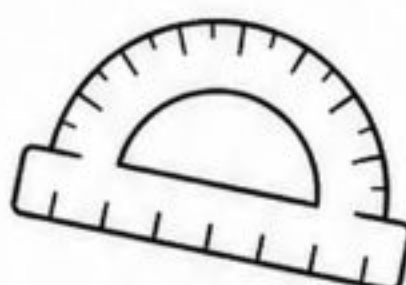
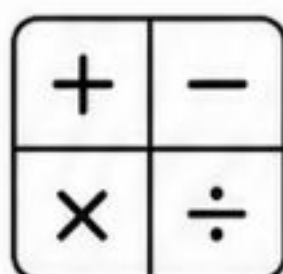
Inverse:

$64 - 28 = 36$

C. Explain

9. How can inverse operations help you check a missing-number equation?

They undo the operation, then I substitute the number back to check.





Mirror Equations



Name: _____

Make both sides of each equation equal. Use the inverse operation to find the missing number.

1. $4 \times 6 = \underline{\quad} \times 8$

2. $36 \div 4 = 27 \div \underline{\quad}$

3. $45 + \underline{\quad} = 12 \times 5$

4. $\underline{\quad} - 18 = 7 \times 4$

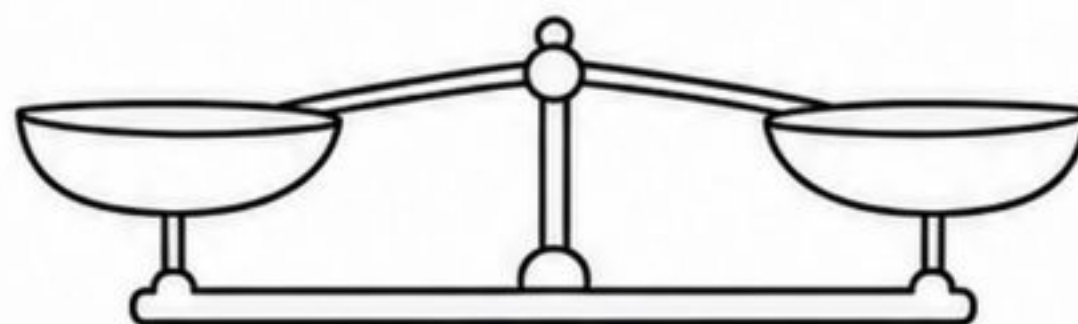
5. $1 \div 9 = \underline{\quad} + 4$

6. $2 \times \underline{\quad} = 6 \times 12$

7. $100 - 35 = 5 \times \underline{\quad}$

8. $\underline{\quad} \div 7 = 48 \div 6$

Challenge Write your own mirror equation with a missing number.





Mirror Equations



ANSWERS

Name: _____

Make both sides of each equation equal. Use the inverse operation to find the missing number.

1. $4 \times 6 = \underline{3} \times 8$

2. $36 \div 4 = 27 \div \underline{3}$

3. $45 + \underline{15} = 12 \times 5$

4. $\underline{60} - 18 = 7 \times 6$

5. $51 \div 9 = \underline{3} + 4$

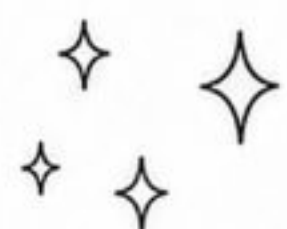
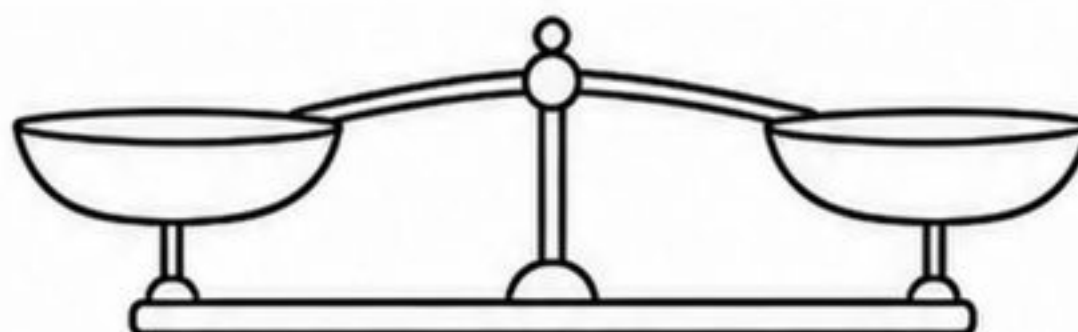
6. $3 \times \underline{9} = 6 \times 12$

7. $100 - 35 = 5 \times \underline{13}$

8. $\underline{56} \div 7 = 48 \div 6$

Challenge Write your own mirror equation with a missing number.

$6 \times \underline{\quad} = 3 \times 10; \underline{\quad} = 5$





Missing Multiplier Word Problems

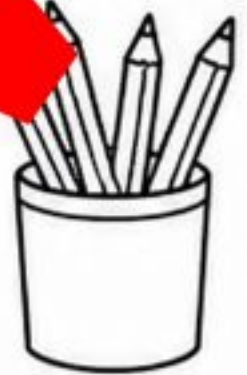


Name: _____

Write a missing-number equation for each problem, then solve.

- 1.** Six packets hold 54 pencils altogether. Each packet has the same number of pencils. How many pencils are in each packet?

Equation: _____ Answer: _____



- 2.** Eight shelves hold 72 books altogether. Each shelf holds the same number of books. How many books are on each shelf?

Equation: _____ Answer: _____



- 3.** Seven groups share 63 counters equally. How many counters are in each group?

Equation: _____ Answer: _____



- 4.** A display has 54 stickers in 12 equal rows. How many stickers are in each row?

Equation: _____ Answer: _____



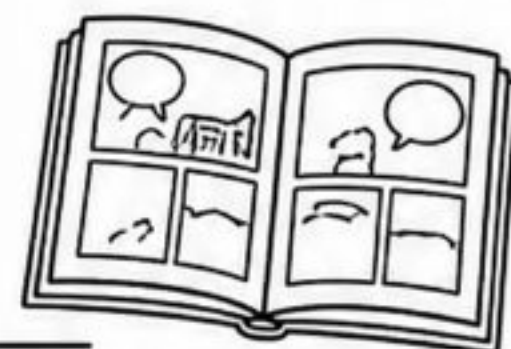
- 5.** Nine bags hold 45 marbles altogether. How many marbles are in each bag?

Equation: _____ Answer: _____



- 6.** A comic has 96 pages across 8 equal chapters. How many pages are in each chapter?

Equation: _____ Answer: _____





Missing Multiplier Word Problems



Name: ANSWERS

Write a missing-number equation for each problem, then solve.

1. Six packets hold 54 pencils altogether. Each packet has the same number of pencils. How many pencils are in each packet?

Equation: $6 \times 9 = 54$ Answer: 9



2. Eight shelves hold 72 books altogether. Each shelf holds the same number of books. How many books are on each shelf?

Equation: $8 \times 9 = 72$ Answer: 9



3. Seven groups share 63 counters equally. How many counters are in each group?

Equation: $7 \times 9 = 63$ Answer: 9



4. A display has 84 stickers in 12 equal rows. How many stickers are in each row?

Equation: $12 \times 7 = 84$ Answer: 7



5. Five bags hold 45 marbles altogether. How many marbles are in each bag?

Equation: $5 \times 9 = 45$ Answer: 9



6. A comic has 96 pages across 8 equal chapters. How many pages are in each chapter?

Equation: $8 \times 12 = 96$ Answer: 12





Missing Pieces: Level 1



Name: _____

Find each missing number. Use inverse operations to check your work.

1. $9 \times \square = 63$

2. $\square \times 6 = 48$

3. $72 \div \square = 9$

4. $\square \div 5 = 11$

5. $38 + \square = 70$

6. $\square + 27 = 64$

7. $9 \times \square = 41$

8. $\square - 18 = 53$

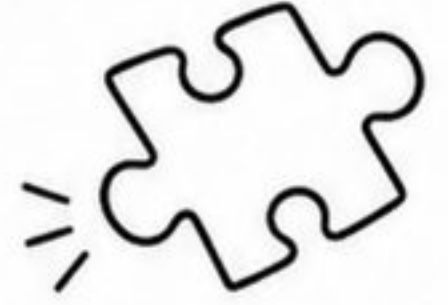
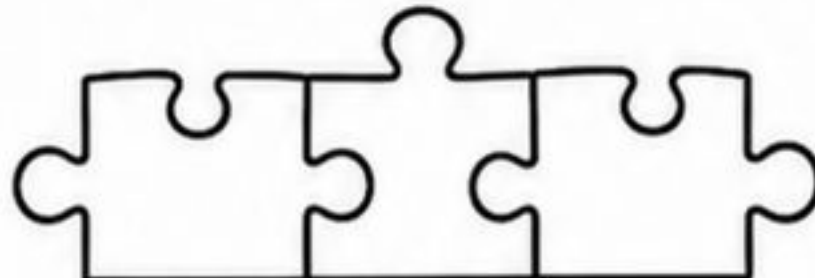
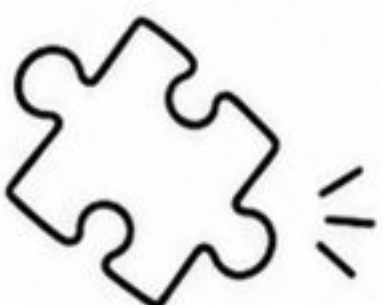
9. $4 \times \square = 36$

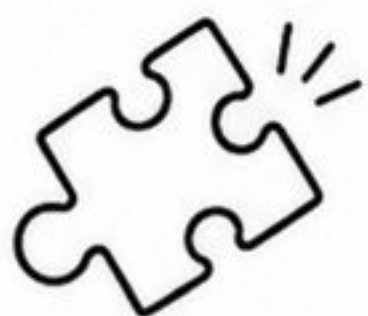
10. $\square \times 12 = 84$

11. $90 \div \square = 10$

12. $\square \div 7 = 8$

Reflection: Which inverse operation did you use most today?





Missing Pieces: Level 1



Name: ANSWERS

Find each missing number. Use inverse operations to check your work.

1. $9 \times \boxed{7} = 63$

2. $\boxed{8} \times 6 = 48$

3. $72 \div \boxed{8} = 9$

4. $\boxed{55} \div 5 = 11$

5. $38 + \boxed{32} = 70$

6. $\boxed{37} + 27 = 64$

7. $9 \times \boxed{55} = 41$

8. $\boxed{71} - 18 = 53$

9. $4 \times \boxed{9} = 36$

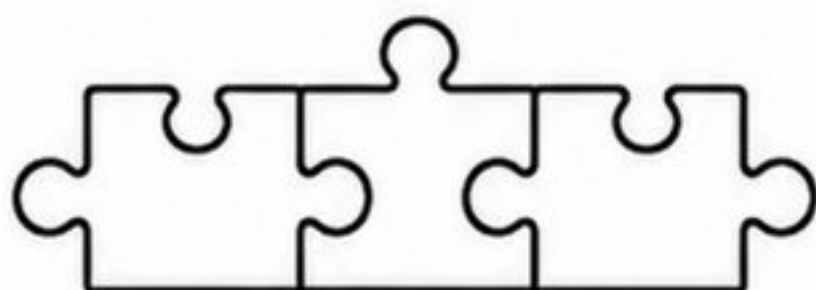
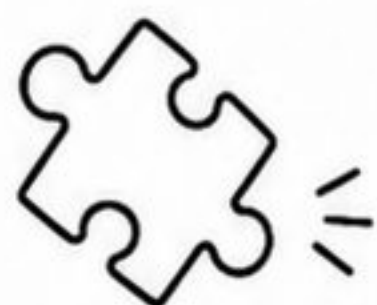
10. $\boxed{7} \times 12 = 84$

11. $90 \div \boxed{9} = 10$

12. $\boxed{56} \div 7 = 8$

Reflection: Which inverse operation did you use most today?

Multiplication and division are inverse operations.





Missing Pieces: Level 2



Page 1

Name: _____

Solve each multi-step equation. Work backwards and check your answer.

1. $5 \times \underline{\quad} + 10 = 45$

Working: _____

Check: _____

2. $72 \div \underline{\quad} - 3 = 6$

Working: _____

Check: _____

3. $\underline{\quad} \times 4 = 9 + 3$

Working: _____

Check: _____

4. $\underline{\quad} - (\underline{\quad} \times 6) = 58$

Working: _____

Check: _____





Missing Pieces: Level 2



Page 1

Name: ANSWERS

Solve each multi-step equation. Work backwards and check your answer.

1. $5 \times \underline{7} + 10 = 45$

Working: $45 - 10 = 35, 35 \div 5 = 7$

Check: $5 \times 7 + 10 = 45$

2. $72 \div \underline{8} - 3 = 6$

Working: $6 + 3 = 9, 72 \div 9 = 8$

Check: $72 \div 8 - 3 = 6$

3. $\underline{10} \times 4 - 9 = 31$

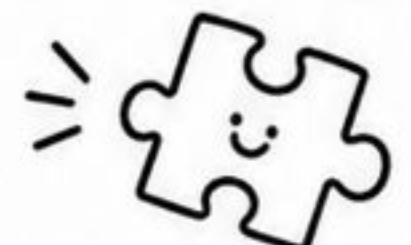
Working: $31 + 9 = 40, 40 \div 4 = 10$

Check: $10 \times 4 - 9 = 31$

4. $100 - (\underline{7} \times 6) = 58$

Working: $100 - 58 = 42, 42 \div 6 = 7$

Check: $100 - (7 \times 6) = 58$





Missing Pieces: Level 2

Page 2



Name: _____

Solve each multi-step equation. Work backwards and check your answer.

5. $(\underline{\quad} + 8) \times 3 = 45$

Working: _____

Check: _____

6. $6(\underline{\quad} - 2) = 42$

Working: _____

Check: _____

7. $84 \div (\underline{\quad} - 5) = 7$

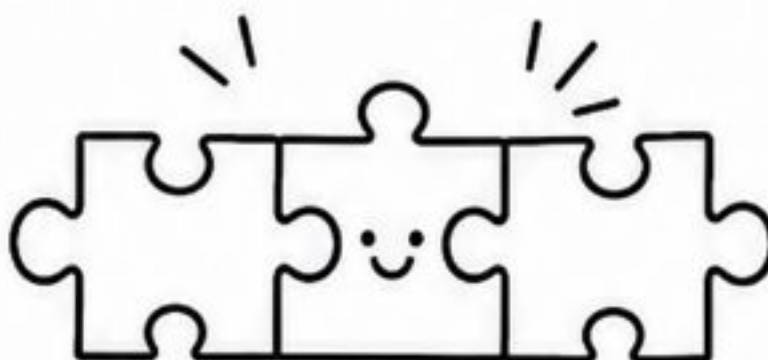
Working: _____

Check: _____

8. $(\underline{\quad} \div 4) + 11 = 20$

Working: _____

Check: _____





Missing Pieces: Level 2

Page 2



Name: ANSWERS

Solve each multi-step equation. Work backwards and check your answer.

5. $(\underline{7} + 8) \times 3 = 45$

Working:

$$45 \div 3 = 15, 15 - 8 = 7$$

Check: $(7 + 8) \times 3 = 45$

6. $6 \times (\underline{9} - 2) = 42$

Working:

$$42 \div 6 = 7, 7 + 2 = 9$$

Check: $6 \times (9 - 2) = 42$

7. $84 \div (\underline{7} + 5) = 7$

Working:

$$84 \div 7 = 12, 12 - 5 = 7$$

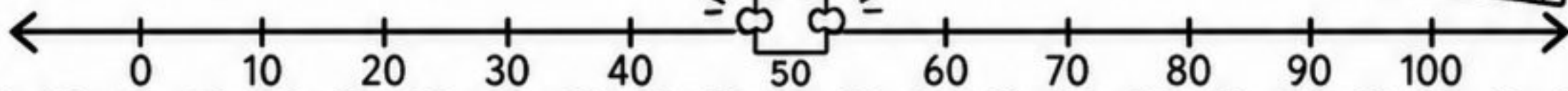
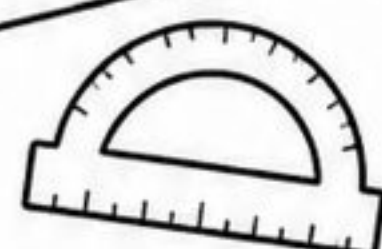
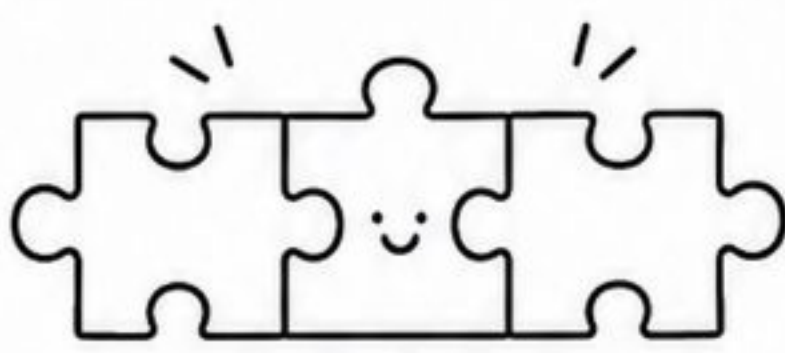
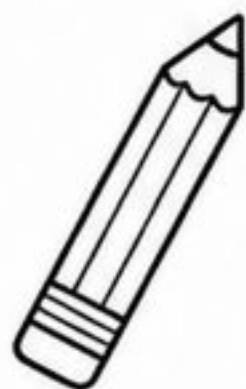
Check: $(7 + 5) = 12, 84 \div 12 = 7$

8. $(\underline{36} \div 4) + 11 = 20$

Working:

$$20 - 11 = 9, 9 \times 4 = 36$$

Check: $(36 \div 4) + 11 = 20$





Mystery Number Mathematics



Name: _____

Solve each mystery number. Write the equation you use.

- A.** I think of a number, multiply it by 6, then subtract 12. The result is 60.

Equation: _____ Number: _____

- B.** I think of a number, divide it by 3, then subtract 4. The result is 7.

Equation: _____ Number: _____

- C.** Three less than twice my number equals 5.

Equation: _____ Number: _____

- D.** My number minus 18, then divided by 6, gives 9.

Equation: _____ Number: _____

- E.** Four times my number plus 7 equals 51.

Equation: _____ Number: _____

- F.** My number minus 9, then multiplied by 5, equals 40.

Equation: _____ Number: _____





Mystery Number Mathematics



Name: _____ **ANSWERS**

Solve each mystery number. Write the equation you used.

- A.** I think of a number, multiply it by 6, then add 12. The result is 60.

Equation: $6 \times 8 + 12 = 60$ Number: 8

- B.** I think of a number, divide it by 5, then subtract 4. The result is 7.

Equation: $55 \div 5 - 4 = 7$ Number: 55

- C.** Three less than twice my number is 25.

Equation: $2 \times 14 - 3 = 25$ Number: 14

- D.** My number plus 18, then divided by 6, gives 9.

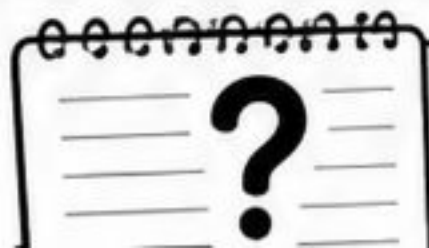
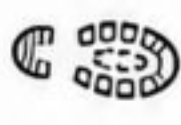
Equation: $(36 + 18) \div 6 = 9$ Number: 36

- E.** 4 times my number plus 7 equals 51.

Equation: $4 \times 11 + 7 = 51$ Number: 11

- F.** My number minus 9, then multiplied by 5, equals 40.

Equation: $(17 - 9) \times 5 = 40$ Number: 17





Multi-Operation Missing Numbers



Name: _____

Work backwards to find each missing number. Check by substituting your answer.

1. $__ + 14 \times 2 = 50$

Answer:

Working: _____

2. $6 \times __ = 40$

Answer:

Working: _____

3. $90 \div __ + 5 = 15$

Answer:

Working: _____

4. $__ \times 7 = 28$

Answer:

Working: _____

5. $4 \times (__ + 6) = 52$

Answer:

Working: _____

6. $(__ - 5) \div 3 = 9$

Answer:

Working: _____

7. $120 - 8 \times __ = 40$

Answer:

Working: _____

8. $7 \times __ + 11 = 60$

Answer:

Working: _____

9. $(__ \div 4) \times 4 = 8$

Answer:

Working: _____

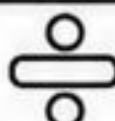
10. $3 \times (__ - 2) = 45$

Answer:

Working: _____

Choose one equation and explain your first inverse step.







Multi-Operation Missing Numbers



Name: _____ **ANSWERS**

Work backwards to find each missing number. Check by substituting your answer.

1. 22 + 14 x 2 = 50

Answer: 22

Working: 50 - 14 x 2 = 50 - 28 = 22

2. 6 x 8 = 48

Answer: 8

Working: 48 ÷ 6 = 8

3. 90 ÷ 9 + 5 = 15

Answer: 9

Working: 15 - 5 = 10, 90 ÷ 10 = 9

4. 49 - 7 x 3 = 28

Answer: 49

Working: 28 + 7 x 3 = 28 + 21 = 49

5. 4 x (7 + 6) = 52

Answer: 7

Working: 52 ÷ 4 = 13, 13 - 6 = 7

6. (32 - 5) ÷ 3 = 9

Answer: 32

Working: 9 x 3 = 27, 27 + 5 = 32

7. 120 - 64 = 56

Answer: 64

Working: 120 - 56 = 64, 64 ÷ 8 = 8

8. 7 x 7 + 11 = 60

Answer: 7

Working: 60 - 11 = 49, 49 ÷ 7 = 7

9. (72 ÷ 6) - 4 = 8

Answer: 72

Working: 8 + 4 = 12, 12 x 6 = 72

10. 3 x (17 - 2) = 45

Answer: 17

Working: 45 ÷ 3 = 15, 15 + 2 = 17

Choose one equation and explain your first inverse step.

I undid the last operation first, then worked backwards to isolate the missing number.



Inverse Operation Loop Cards

Page 1



1

START

Who has 6×7 ?



2

I have 42

Who has 9×5 ?



3

I have 45

Who has $64 \div 8$?



4

I have 8

Who has 12×6 ?



5

I have 12

Who has $8 \div 9$?



6

I have 9

Who has 4×11 ?



7

I have 44

Who has $100 \div 4$?



8

I have 25

Who has 8×8 ?



Inverse Operation Loop Cards

Page 2

9 I have 64

Who has $70 \div 7$?



10 I have 10

Who has 10×1 ?



11 I have 66

Who has $144 \div 12$?



12 I have 12

Who has 5×11 ?



13 I have 55

Who has $55 \div 7$?



14 I have 7

Who has 7×12 ?



15 I have 84

Who has $45 \div 3$?



16 I have 15

Who has 6×6 ?



The final answer is 36.
Say: The End.



Missing Number Bingo



Boards A and B

BOARD A

18	32	48	74	68
20	16	52	28	35
55	8	FREE	22	54
27	10	67	21	86
90	46	70	59	98

BOARD B

55	88	54	95	78
45	66	39	34	19
57	72	FREE	76	47
34	18	20	27	42
6	16	27	46	8



Missing Number Bingo



Boards C and D



BOARD C

6	36	55	76	47
72	11	44	5	70
14	40	FREE	71	20
54	39	70	34	19
25	30	23	32	13



BOARD D

57	30	31	14	84
5	74	39	18	64
40	36	FREE	34	11
96	7	61	77	82
92	66	7	84	44



Missing Number Bingo Caller Cards



$6 \times _ = 108$	$_ + 20 = 52$	$64 \div _ = 8$	$_ - 14 = 60$
$7 \times _ = 84$	$90 \div _ = 10$	$_ - 19 = 58$	$8 \times _ = 64$
$76 - _ = 31$	$_ \div 6 = 11$	$_ + _ = 95$	$98 - _ = 44$
$_ + 27 = 75$	$88 - _ = 11$	$9 \times _ = 81$	$_ - 22 = 34$
$36 \div _ = 6$	$_ \times 7 = 49$	$55 + _ = 90$	$84 \div _ = 12$
$_ + 16 = 43$	$92 - _ = 48$	$12 \times _ = 96$	$_ \div 5 = 14$



Finding Missing Numbers Assessment



Name: _____

Score: ____ / 20

Use inverse operations to solve. Show working where appropriate.

Section A: Missing Numbers (8 marks)

1. $8 \times \underline{\quad} = 72$

2. $\underline{\quad} \times 7 = 63$

3. $96 \div \underline{\quad} = 12$

4. $\underline{\quad} \div 9 = 6$

5. $35 \times \underline{\quad} = 81$

6. $\underline{\quad} - 24 = 58$

7. $11 \times \underline{\quad} = 99$

8. $84 \div \underline{\quad} = 7$

Section B: Mirror Equations (4 marks)

9. $6 \times 8 = \underline{\quad} \times 12$

10. $75 - 18 = 3 \times \underline{\quad}$

11. $\underline{\quad} + 27 = 9 \times 8$

12. $\underline{\quad} \div 5 = 42 \div 6$

Section C: Word Problems (4 marks)

13. Nine trays have 108 muffins altogether. Each tray has the same number. How many muffins are on each tray?

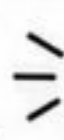
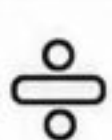
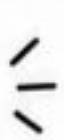
Equation: _____ Answer: _____

14. A box packs 96 badges into bags of 8. How many bags are needed?

Equation: _____ Answer: _____

Section D: Explain (4 marks)

15. Explain how inverse operations help you solve $7 \times \underline{\quad} = 84$.





Finding Missing Numbers Assessment



Name: ANSWERS

Score: / 20

Use inverse operations to solve. Show working where asked.

Section A: Missing Numbers (8 marks)

1. $8 \times 9 = 72$

2. $9 \times 7 = 63$

3. $96 \div 8 = 12$

4. $54 \div 9 = 6$

5. $35 \div 5 = 7$

6. $82 - 24 = 58$

7. $11 \times 9 = 99$

8. $84 \div 12 = 7$

Section B: Mirror Equations (4 marks)

9. $6 \times 8 = 4 \times 12$

10. $75 - 18 = 3 \times 17$

11. $45 + 27 = 9 \times 8$

12. $35 \div 5 = 42 \div 6$

Section C: Word Problems (4 marks)

13. Nine trays hold 108 muffins altogether. Each tray has the same number. How many muffins are on each tray?

Equation: $108 \div 9 = 12$

Answer: 12 muffins

14. A box packs 96 badges into bags of 8. How many bags are needed?

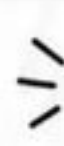
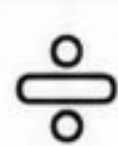
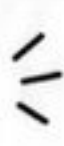
Equation: $96 \div 8 = 12$

Answer: 12 bags

Section D: Explain (4 marks)

15. Explain how inverse operations help you solve $7 \times \underline{\quad} = 84$.

Suggested answer: Use the inverse operation: $84 \div 7 = 12$, so $7 \times 12 = 84$.



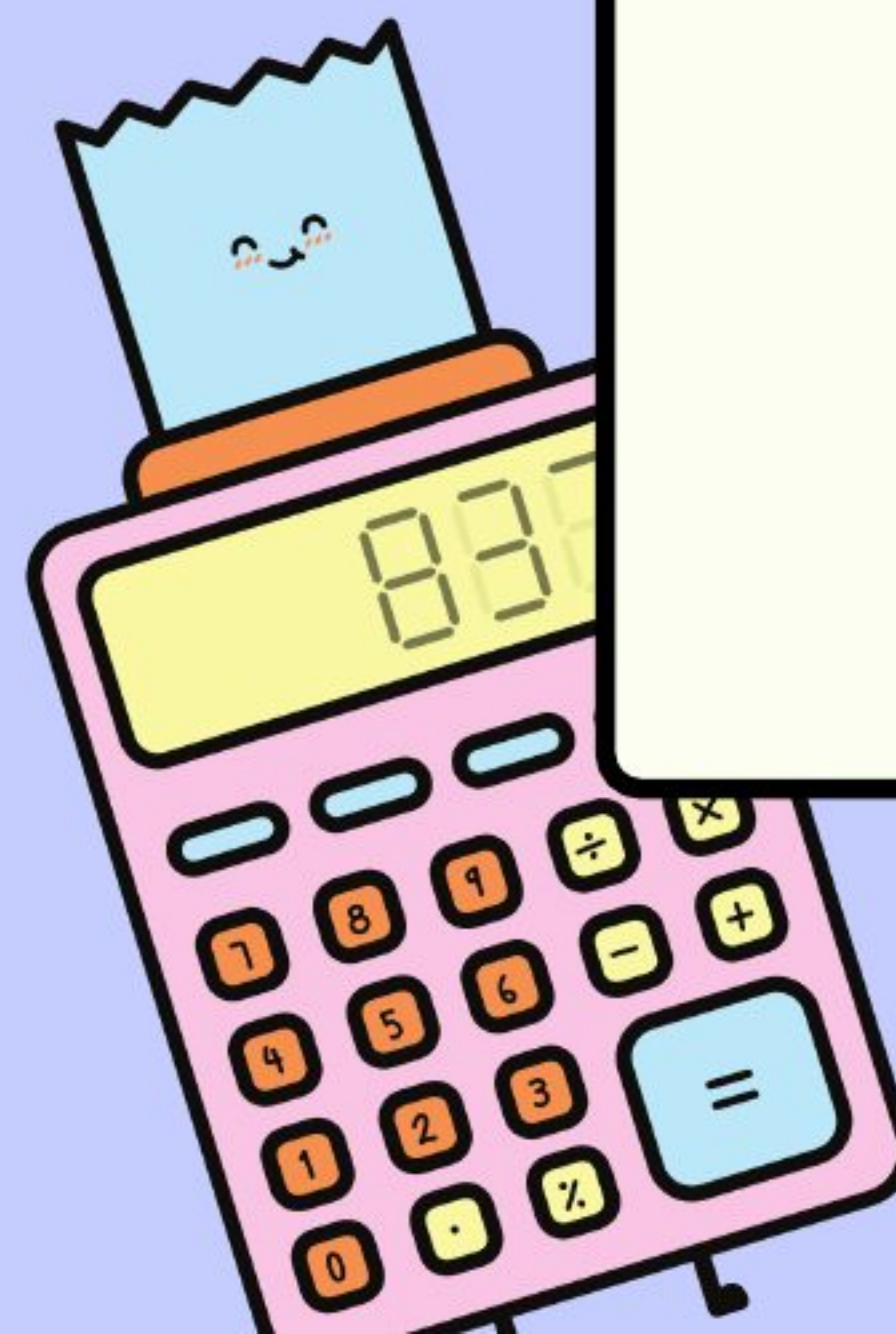
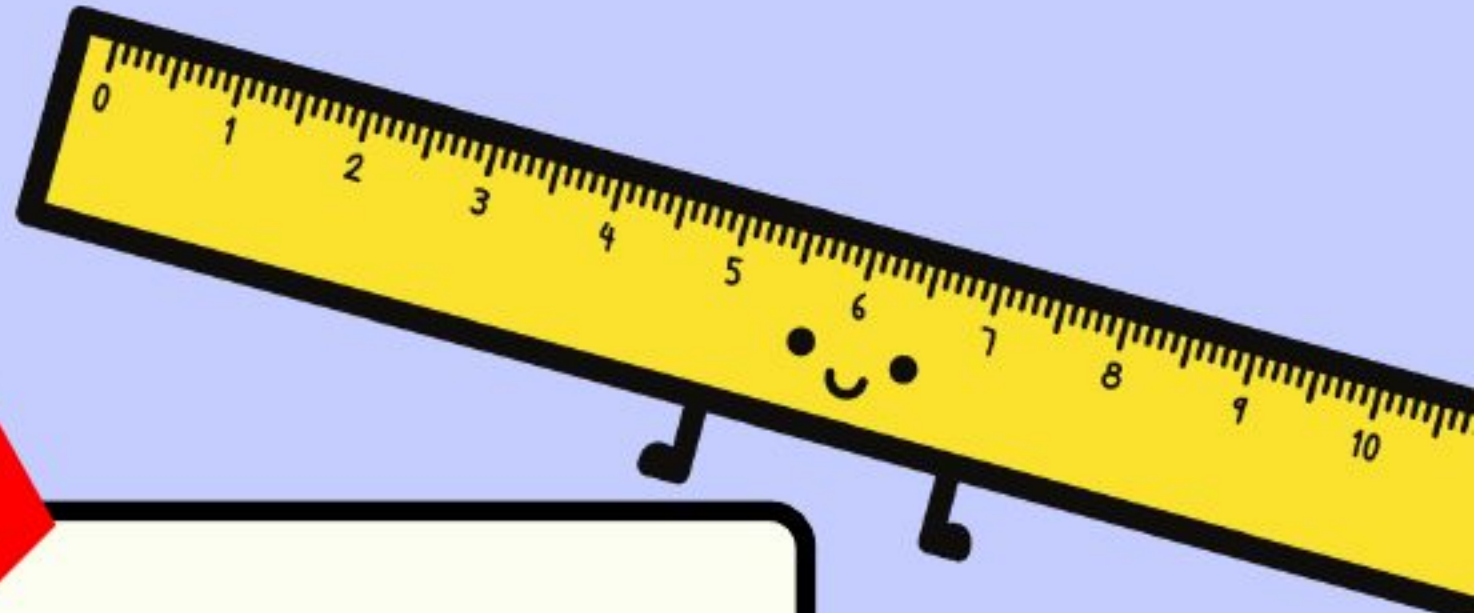
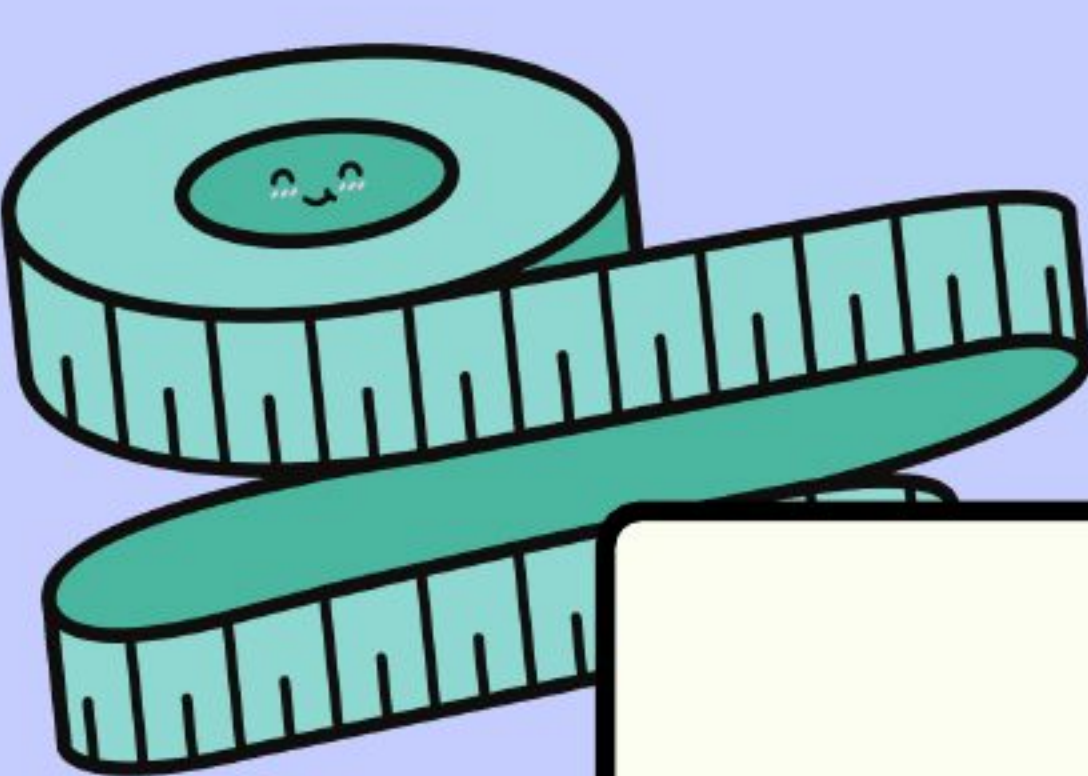


Pre-Algebra Rubric



Understanding missing numbers using inverse operations

Criteria	BEGINNING	DEVELOPING	ACHIEVING	CONFIDENT	EXCEEDING
1. Uses inverse operations	Needs support to identify and use inverse operations.	Uses inverse operations in simple contexts with prompts.	Uses inverse operations accurately in expected Year 5 tasks.	Chooses and applies inverse operations confidently in mixed tasks and contexts.	Applies inverse operations flexibly to solve problems in unfamiliar situations and explains choices clearly.
2. Solves missing-number equations	Needs support to set up or solve missing-number equations.	Solves simple missing-number equations with prompts.	Solves expected missing-number equations accurately.	Solves a range of missing-number equations, including multi-step, with confidence.	Solves complex missing-number equations using efficient strategies and justifies thinking clearly.
3. Represents and solves word problems	Needs support to understand or represent the problem.	Represents the problem with support and solves simple problems.	Represents and solves expected Year 5 word problems accurately.	Solves a range of word problems in different contexts and uses suitable strategies.	Solves challenging word problems flexibly and explains solutions in detail using mathematical language.
4. Explains and checks reasoning	Needs support to explain or check answers.	Explains ideas simply and checks answers with support.	Explains reasoning and uses inverse operations to check answers.	Provides clear explanations and consistently checks answers using inverse operations.	Explains reasoning thoroughly and uses multiple checks to justify accuracy and improve solutions.



Pre-Algebra

PREVIEW