

Place Value Reasoning & Number Sense

Place Value • Number Sense • Mathematical Reasoning
Build • Represent • Compare • Reason • Apply

UK & US
Editions



Digit Value • Number Forms • Comparing • Ordering • Reasoning

What's Included

A Look Inside Both 70-Page Editions

- 44 Activity Pages in Each Edition
- 88 Place Value Reasoning Challenges
- 5 Learning Stages
- Digit Value, Number Forms, Comparing & Ordering
- Number Lines, Missing Digits & Number Clues
- 22 Full Worked-Solution Pages
- UK & US Editions Included

Digit Value Detective
Find the value, not just the digit.

1. In 103,241, what is the value of the digit 3? Name its place and its value.

write / answer

REASON / EXPLAIN: Explain how the position of the digit determines its value.

2. In 756,432, what is the value of the digit 7? Name its place and its value.

write / answer

Move One Place
See what happens when a digit moves left or right.

1. In 34,562, the digit 4 represents 4,000. If the 4 moved one place left, what would it represent?

write / answer

REASON / EXPLAIN: What operation describes the change?

2. In 982,321, the digit 3 represents 30. If the 3 moved one place right, what would it represent?

write / answer

Order Different Forms
Convert first, then order.

1. Order from smallest to largest:
\$2,000, 50,000 + 2,000 + 900, fifty-two thousand and nine, \$2,800

write / answer

REASON / EXPLAIN: Convert each representation to standard form first.

2. Order from largest to smallest:
310,040; 200,000 + 10,000 + 400; three hundred and ten thousand and four; 305,400

write / answer

Locate the Number
Reason about magnitude, not just counting.

1. A number is between 65,000 and 66,000 and is closer to 66,000. Which could it be: 65,120; 65,600; 65,760 or 65,320?

write / answer

REASON / EXPLAIN: Compare each choice with the midpoint 65,500.

2. A number lies halfway between 238,000 and 242,000. What is the number?

write / answer

Build Strong Place Value Reasoning

What Is the Digit Worth?

How Can I Represent It?

How Can I Prove It?

Digit Value Detective

Use place-value language precisely.

SEE

1. In 954,075, what is the value of the digit 4? Name its place and its value.

WORK / ANSWER

REASON / EXPLAIN: Explain how the position of the digit determines its value.

2. In 352,806, what is the value of the digit 0? Name its place and its value.

WORK / ANSWER

REASON / EXPLAIN: Explain how the position of the digit determines its value.

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Place Value Map

Digit • Place • Value • Representation

SEE

Example number: 473,625

PLACE	DIGIT	VALUE
Hundred-thousands	4	400,000
Ten-thousands	7	70,000
Thousands	3	3,000
Hundreds	6	600
Tens	2	20
Ones	5	5

Expanded form: 400,000 + 70,000 + 3,000 + 600 + 20 + 5

Word form: four hundred and seventy-three thousand six hundred and twenty-five

DIGIT the symbol itself, such as 7	PLACE where the digit is positioned	VALUE what the digit is worth in that place
7 ones	7 tens	7 hundreds
7 • move left → 70	70 • move left → 700	700 • move left → 7,000
6,000	60,000	600
6 thousands • move right → 600	6 ten-thousands • move right → 6,000	6 hundreds • move right → 60

Quick relationships

7 ones	7 tens	7 hundreds
7 • move left → 70	70 • move left → 700	700 • move left → 7,000
6,000	60,000	600
6 thousands • move right → 600	6 ten-thousands • move right → 6,000	6 hundreds • move right → 60

PLACE VALUE RULE: one place left = $\times 10$ • one place right = $\div 10$

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Error Analysis

Find the misconception, then repair it.

REASON

1. Mia says: "In 53,821, the 3 is worth 300 because it is the third digit." Is Mia correct? Explain the error and give the correct value.

WORK / ANSWER

REASON / EXPLAIN: Distinguish digit position from place value.

2. Noah writes 406,028 as 400,000 + 6,000 + 200 + 8. Find and correct the error.

WORK / ANSWER

REASON / EXPLAIN: Check the hundreds and tens digits carefully.

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SEE • BUILD • CONNECT • REASON • APPLY

Full Worked Solutions

Worked Solutions 01
Question • Reasoning • Answer

QUESTION A1 • 1
In 583,241, what is the value of the digit 8? Name its place and its value.
REASONING
• The digit 8 is in the ten-thousands place.
• One ten-thousand is 10,000.
• $8 \times 10,000 = 80,000$.
ANSWER ten-thousands place; 80,000

QUESTION A1 • 2
In 706,438, what is the value of the digit 4? Name its place and its value.
REASONING
• The digit 4 is in the hundreds place.
• One hundred is 100.
• $4 \times 100 = 400$.
ANSWER hundreds place; 400

QUESTION A2 • 1
In 914,075, what is the value of the digit 4? Name its place and its value.
REASONING
• The digit 4 is in the thousands place.
• One thousand is 1,000.
• $4 \times 1,000 = 4,000$.
ANSWER thousands place; 4,000

QUESTION A2 • 2
In 352,806, what is the value of the digit 0? Name its place and its value.
REASONING
• The digit 0 is in the tens place.
• One ten is 10.
• $0 \times 10 = 0$.
ANSWER tens place; 0

Worked Solutions 02
Question • Reasoning • Answer

QUESTION A39 • 1
Which is closer to 300,000: 297,650 or 303,120?
REASONING
• $300,000 - 297,650 = 2,350$.
• $303,120 - 300,000 = 3,120$.
• $2,350 < 3,120$.
ANSWER 297,650

QUESTION A39 • 2
A digit has value 7,000 in one number and 700,000 in another. How many places has it moved, and in which direction?
REASONING
• $700,000 \div 7,000 = 100$.
• A factor of 100 means two places.
• The value increased, so it moved left.
ANSWER Two places to the left

Worked Solutions 03
Question • Reasoning • Answer

QUESTION A5 • 2
A digit has a value of 80,000. It moves two places left. What is its new value?
REASONING
• $80,000 \div 10 \div 10 = 800$.
• Two places right means $\div 100$.
ANSWER 800

QUESTION A6 • 2
Build a number with 4 hundred-thousands, 0 ten-thousands, 7 thousands, 2 hundreds, 9 tens and 1 one.
REASONING
• $400,000 + 0 + 7,000 + 200 + 90 + 1 = 407,291$.
ANSWER 407,291

Worked Solutions 04
Question • Reasoning • Answer

QUESTION A7 • 2
Write the number made from 9 hundred-thousands, 6 ten-thousands, 0 thousands, 3 hundreds, 1 ten and 7 ones.
REASONING
• $900,000 + 60,000 + 300 + 10 + 7 = 960,317$.
• The thousands place contains 0.
ANSWER 960,317

Follow the Reasoning • Understand the Method • Check the Answer