# Reasoning and Problem Solving
# Step 2: Compare and Order

## National Curriculum Objectives:

**Mathematics Year 6: (6N2) Read, write, order and compare numbers up to 10,000,000**

## Differentiation:

**Questions 1, 4 and 7 (Problem Solving)**
**Developing Use understanding of place value to find and order three possible 7-digit numbers using 4 clues. No zeros.**
**Expected Use understanding of place value to find and order three possible 7-digit numbers using 4 clues. Some use of zero as a place holder.**
**Greater Depth Use understanding of place value to find and order three possible 7-digit numbers using 4 clues. Multiples zeros used within a number.**

**Questions 2, 5 and 8 (Reasoning)**
**Developing Use understanding of place value partitioning to compare 7-digit numbers. Use of only one set of partitioned numbers.**
**Expected Use understanding of place value partitioning to compare 7-digit numbers. Using zero as a place holder; no exchanging.**
**Greater Depth Use understanding of place value partitioning to compare 7-digit numbers. Numbers represented using numerals, words; multiples zeros used within a number. Use of exchanging.**

**Questions 3, 6 and 9 (Problem Solving)**
**Developing Use understanding of place value to identify 6-digit numbers half way between positions on a number line. Use of multiples of 50,000.**
**Expected Use understanding of place value to identify 7-digit numbers half way between positions on a number line. Use of multiples of 250,000.**
**Greater Depth Use understanding of place value to identify 7-digit numbers between unequal positions on a number line (E.g. half way between, difference between A and B is double that between B and C).**

## More Year 6 Place Value resources.

## Did you like this resource? Don't forget to review it on our website.

# Compare and Order

1a. Use these digit cards to find three possible answers, then order them from smallest to largest.

| 7 | 3 | 6 | 9 | 2 | 1 | 8 |
|---|---|---|---|---|---|---|

- The number in the ten thousands column is one more than the number in the hundred thousands column.
- The number in the ones column is an odd number less than 5.
- The number is between 1,000,000 and 1,800,000.

D PS

# Compare and Order

1b. Use these digit cards to find three possible answers, then order them from largest to smallest.

| 4 | 8 | 1 | 6 | 5 | 2 | 3 |
|---|---|---|---|---|---|---|

- The number in the ones column is half the number in the ten thousands column.
- The number in the thousands column is even.
- The number is between 1,000,000 and 1,500,000.

D PS

2a. Sasha thinks the largest possible missing number would be 2,924,538.

2,524,538 + 400,000 > ?

Do you agree? Explain why.

D R

2b. Corbin thinks the smallest possible missing number would be 1,467,825.

? > 1,447,824 + 20,000

Do you agree? Explain why.

D R

3a. B is half way between A and C. C is half way between B and D.

| A | B | C | D |
|---|---|---|---|
| 3,600,000 | 3,650,000 | ? | ? |

What are the values of C and D?

D PS

3b. C is half way between B and D. B is half way between A and C.

| A | B | C | D |
|---|---|---|---|
| 5,450,000 | ? | ? | 5,600,000 |

What are the values of B and C?

D PS

## Compare and Order

**4a. Use these digit cards to find three possible answers, then order them from smallest to largest.**

| 5 | 1 | 8 | 0 | 3 | 2 | 7 |
|---|---|---|---|---|---|---|

- The digit in the hundred thousands column and the digit in the thousands column are odd numbers and have a difference of 2.
- The digit in the ten thousands column and the digit in the ones column have a difference of 7.
- The number is greater than 4,000,000.

E PS

## Compare and Order

**4b. Use these digit cards to find three possible answers, then order them from largest to smallest.**

| 2 | 1 | 8 | 6 | 0 | 7 | 4 |
|---|---|---|---|---|---|---|

- The digit in the tens column and the digit in the hundred thousands column have a difference of 6.
- The digit in the hundreds column and the digit in the ten thousands column are even and have a difference of 4.
- The number is greater than 3,000,000.

E PS

**5a. Amina thinks the largest possible missing number would be 7,000.**

**4,587,308 + 400,000 > 4,980,308 + ?**

**Do you agree? Explain why.**

E R

**5b. Freddie thinks the smallest possible missing number would be 30,001.**

**6,310,724 + 40,000 < 6,320,724 + ?**

**Do you agree? Explain why.**

E R

**6a. B is half way between A and C. C is half way between B and D.**

| A | B | C | D |
|---|---|---|---|
| 4,250,000 | ? | 5,750,000 | ? |

**What are the values of B and D?**

E PS

**6b. C is half way between B and D. B is half way between A and C.**

| A | B | C | D |
|---|---|---|---|
| 8,500,000 | ? | ? | 9,250,000 |

**What are the values of B and C?**

E PS

## Compare and Order

7a. Use these digit cards to find three possible answers, then order them from smallest to largest.

| 3 | 0 | 8 | 2 | 0 | 7 | 5 |
|---|---|---|---|---|---|---|

- The number is a multiple of 4.
- The number is greater than 5,000,000.
- The difference between the digits in the thousands column and the hundreds column is 2.
- The digit in the ten thousands column is an odd number.

GD PS

## Compare and Order

7b. Use these digit cards to find three possible answers, then order them from largest to smallest.

| 0 | 2 | 8 | 5 | 9 | 3 | 0 |
|---|---|---|---|---|---|---|

- The number is a multiple of 25.
- The number is between 9,000,000 and 10,000,000.
- The digit in the hundreds column is not a multiple of 2.
- The digits in the ten thousands column and thousands column are even.

GD PS

8a. Ben thinks the smallest possible missing number would be 200,090.

2,646,794 + 400,006 < 2,846,604 + ?

Do you agree? Explain why.

GD R

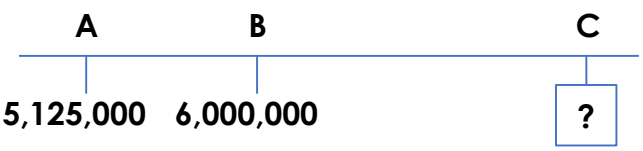
8b. Gaby thinks the largest possible missing number would be 50,905.

7,447,894 + 32,200 > 7,429,192 + ?

Do you agree? Explain why.

GD R

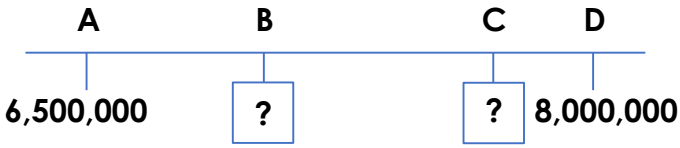
9a. The difference between A and C is double the difference between A and B.




What is the value of C?

GD PS

9b. The difference between C and D is half of the difference between A and B. The difference between B and C is three times the difference between C and D. What are the values of B and C?




What are the values of B and C?

GD PS

## Reasoning and Problem Solving
## Compare and Order

### Developing

**1a.** 1,782,293; 1,782,693; 1,786,963

**2a.** Sasha is incorrect because 2,524,538 + 400,000 is not greater than 2,924,538, it is equal to it. The largest possible missing number would be 2,924,537.

**3a.** C = 3,700,000 and D = 3,750,000

### Expected

**4a.** 5,103,287; 7,315,028; 7,315,208

**5a.** Amina is incorrect because 4,587,308 + 400,000 = 4,987,308. 4,980,308 + 7000 = 4,987,308. This means that the statements would be equal. For the first statement to be greater than the second, the largest possible missing number would be 6,999.

**6a.** B = 5,000,000 and D = 6,500,000

### Greater Depth

**7a.** 5,370,280; 5,730,280; 8,035,720

**8a.** Ben is incorrect because 2,846,604 + 200,90 = 3,046,694. If both sides of the equation are equal, the missing number would need to be 200,196. The missing number needs to be one greater than this therefore 200,197 is the smallest possible answer.

**9a.** The difference between A and B = 875,000. 875,000 x 2 = 1,750,000. 5,125,000 + 1,750,000 = 6,875,000. C = 6,875,000.


## Reasoning and Problem Solving
## Compare and Order


### Developing

**1b.** 1,468,523; 1,468,253; 1,346,852

**2b.** Corbin is correct because 1,447,824 + 20,000 = 1,467,824, so for the missing number to be greater than this, he must add one more, which would be 1,467,825.

**3b.** B = 5,500,000 and C = 5,550,000

### Expected

**4b.** 8,124,670; 7,206,481; 4,128,670

**5b.** Freddie is correct because the first part of the equation equals 6,350,724. If Freddie adds 30,001 to 6,320,724 it equals 6,358,725, which would be 1 greater than the first part of the equation.

**6b.** B = 8,750,000 and C = 9,000,000

### Greater Depth

**7b.** 9,820,350; 9,582,300; 9,080,325

**8b.** Gaby is incorrect because 7,429,192 + 50,905 = 7,480,097. This would make the second part of the equation greater than the first part. The largest possible answer is 50,901.

**9b.** 8,000,000 – 6,500,000 = 1,500,000. 1,500,000 ÷ 6 = 250,000. The difference between C and D = 250,000, the difference between A and B = 500,000 and the difference between B and C = 750,000. B = 7,000,000; C = 7,750,000.