CHAPTER

1

Number Concepts, Place Value and Rounding

Vocabulary:

digit
place value
value
ten thousand
hundred thousand
million
approximate

Chapter Outcomes:

- Recognize, represent, model, compare and order numbers up to 1 000 000 with reference to place value.
- Demonstrate an understanding of different types of numbers.
- Develop an understanding of rounding to thousands.

This is a picture of the city of Port of Spain. The 2011 Housing and Population Census recorded that there were 39 963 persons living in the city of Port-of-Spain. Of those persons, 17 861 were male, while 19 103 were female. Almost all of them resided in the 12 383 households found in the city.

Getting Ready for Chapter 1

1. Write in words 9,803.
2. Write the numeral for five thousand, and twenty seven.
3. Write 7 326 in expanded notation.
4. 4 tens = ____ ones
5. 2 hundreds = ____ tens
6. 6 thousands = ____ hundreds
7. Which is larger, 9 099 or 9 100?
8. Round 829 to the nearest ten.
9. Round 2 456 to the nearest hundred.

Represent Numbers

Teaching Point 1:

All numbers are made from the **digits** 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9.

Place value is the value given to a digit by its place in a number.

A **place value chart** shows the value of the digits in a number.

Patterns to One Million

Millions	Thousands			Ones		
M.	HT.	TT.	Th.	H.	T.	O.
1 000 000	100 000	10 000	1 000	100	10	1

1 ten = 10 ones

1 hundred = 10 tens

1 thousand = 10 hundreds

1 ten thousand = 10 thousands

1 hundred thousand = 10 ten thousands

1 million = 10 hundred thousands

This place value chart shows 134 982.

Thousands			Ones		
Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
1	3	4	9	8	2
100 000 1 × 100,000	30 000 3 × 10,000	4 000 4 × 1000	900 9 × 100	80 8 × 10	2 2 × 1

Activity 1:

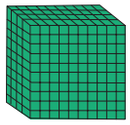
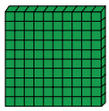
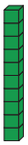
Use place value charts to show the numbers below.

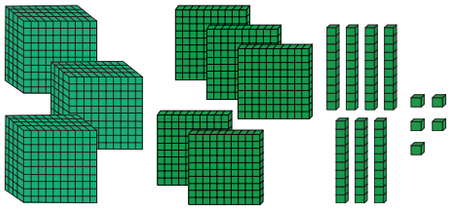
1. 9 900
2. 12 087
3. 52 100
4. 65 999
5. 142 250
6. 801 267
7. 431 703
8. 350 289
9. 200 300
10. 20 981
11. 301 000
12. 76 008
13. 999 999
14. 1 000 000

Teaching Point 2:

Represent 3 575 in different ways.

Using Place Value Blocks

			
1 000	100	10	1

 = 3 575

Using Words

Three thousand, five hundred and seventy - five

Using Place Value

3 575 = 3 thousands, 5 hundreds, 7 tens, 5 ones

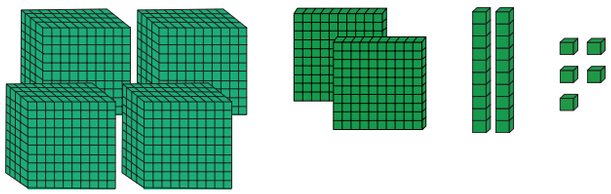
3 575 = three 1 000s, five 100s, seven 10s, five 1s

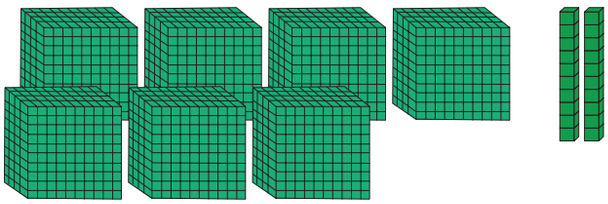
3 575 = 35 hundreds and 75 ones

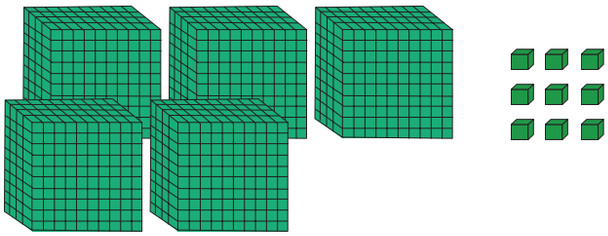
3 575 = 357 tens and 5 ones

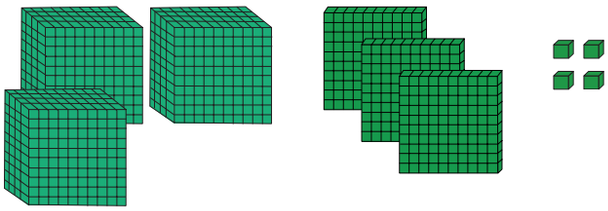
Activity 2:

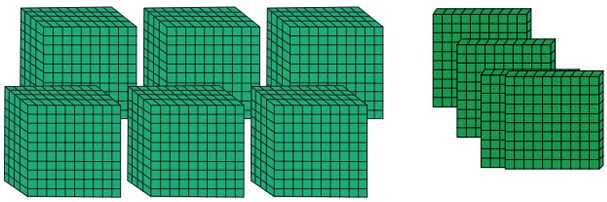
Write the number shown by each model.

1. 

2. 

3. 

4. 

5. 

Activity 3:

Write the word names for these numerals. A place value chart can help you.

1.	5 601	**2.**	9 380	**3.**	7 150
4.	24 800	**5.**	63 975	**6.**	3 040
7.	58 000	**8.**	801 524	**9.**	19 300
10.	496 703	**11.**	640 182	**12.**	451 300

13. 709 004 **14.** 1 000 000 **15.** 260 714

16. 100 500 **17.** 397 248 **18.** 906 100

Activity 4:

Write the numerals for the word names.

1. Three hundred and eleven.
2. Four thousand and nine.
3. Fourteen thousand and seventy-six.
4. Thirty three thousand.
5. Twenty-five thousand, six hundred and seventeen.
6. Forty thousand and one.
7. Fifty thousand and thirty.
8. Two hundred thousand.
9. Eight hundred and seventy-seven thousand.
10. One hundred and ninety-eight thousand and four.
11. Six hundred and eighteen thousand, seven hundred and thirty-three.
12. Four hundred thousand and twenty-six.
13. Three hundred and ten thousand, one hundred and eleven.
14. Twenty-eight thousand, seven hundred and eight.
15. Nine hundred and eight thousand, four hundred and nine.
16. Seven hundred and fifty thousand and ten.
17. Eight hundred and thirteen thousand and thirteen.
18. One million

Activity 5:

Complete the following.

1. 30 = ___ ones
2. 28 = ___ ones
3. 100 = ___ ones
4. 458 = ___ ones
5. 6 701 = ___ ones
6. 200 = ___ tens
7. 340 = ___ tens
8. 5 100 = ___ tens
9. 7 850 = ___ tens
10. 4 000 = ___ hundreds
11. 8 200 = ___ hundreds
12. 78 900 = ___ hundreds
13. 23 000 = ___ thousands
14. 809 000 = ___ thousands
15. 425 = ___ tens and ___ ones
16. 178 = ___ ones
17. 2 678 = ___ thousands and ___ ones
18. 5 130 = ___ thousands and ___ ones
19. 8 005 = ___ hundreds and ___ ones
20. 6 912 = ___ hundreds, ___ tens and ___ ones
21. 74 201 = ___ thousands and ___ ones

22. 80 123 = ___ hundreds and ___ ones

23. 93 074 = ___ hundreds, ___ tens and ___ ones

24. 1 000 000 = ___ thousands

Activity 6:

Write the numeral for each of the following.

1. 2 hundreds, 8 tens, 9 ones
2. 3 hundreds, 7 ones
3. 1 hundred, 4 tens
4. 6 thousands, 5 hundreds, 5 tens, 8 ones
5. 25 thousands, 7 tens, 2 ones
6. 12 thousands, 3 hundreds
7. 2 hundred thousands, 1 ten thousands, 8 thousands, 3 hundreds, 5 tens, 4 ones
8. 420 thousands, 2 hundreds, 6 tens

Place Value and Value

Teaching Point 1:

Place value patterns

Thousands			Ones		
HT	TT	Th	H	T	O
1	1	1	1	1	1
100 000	10 000	1 000	100	10	1

10 times as much as

$\frac{1}{10}$ of

$10 = 1 \times 10$	$10\,000 = 100\,000 \div 10$
$100 = 10 \times 10$	$1\,000 = 10\,000 \div 10$
$1\,000 = 100 \times 10$	$100 = 1\,000 \div 10$
$10\,000 = 1\,000 \times 10$	$10 = 100 \div 10$
$100\,000 = 10\,000 \times 10$	$1 = 10 \div 10$

Activity 1:

Use place value patterns in a place value chart to complete the table below.

Number	Number to the Right	Number to the left
1. 50	5	500
2. 2 000		
3. 400		
4. 60 000		
5. 70		
6. 100 000		

Complete the sentences below.

7. 200 is _____ times as much as 20.
8. 800 is ____ times as much as 8.
9. 3 000 is ____ times as much as 30.
10. 40 000 is ____times as much as 400.
11. 230 is 10 times less than ____.
12. 4 100 is 100 times less than _____.
13. 10 000 is _____ times less than 1 000 000.
14. 7 000 is _____ less than 700 000.
15. 9 120 is _____ less than 912 000.

Teaching Point 2:

What is the place value and value of the underlined digit in the number 243 517?

Thousands			Ones		
Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
2	4	3	5	1	7
200 000	40 000	3 000	500	10	7

The **place value** of **4** is **ten thousands**.

The **value** of **4** is **40 000**.

Activity 2:

Write the place value and value of the underlined digits?

1. 12 145
2. 54 067
3. 490 125
4. 593 809
5. 305 291
6. 132 570
7. 921 384
8. 310 432
9. 762 098
10. 645 100
11. 1 000 000
12. 798 301
13. 201 341
14. 53 772

Activity 3:

Solve the problems.

1. Circle the digit in the number 177 007 which has a value of 70 000.
2. Write a six digit number that has a 7 in the ten thousands place and the number in the thousands place has a value of 3 000.
3. Is the following statement *true* or *false*? 1 000 thousands = 1 000 000
4. Write the number with the smallest value using the digits 1 to 6.
5. Write the number with the largest value using the digits 1 to 6.
6. A digit is in the thousands place. It is moved so that its value is ten times greater. To which place did the digit move?
7. The vote count of the 2015 general election was 734 792. Write the values of the 7s in the number.
8. The table below shows the total population of three Regions in Trinidad.

Arima	Sangre Grande	Diego Martin
33 807	74 546	101 703

In which region does the digit 7 have the least value? Write the value.

9. In 2011 the total population of the Tunapuna, Piarco region was 211 741. Which digit has the greatest value in the number? Write the value.
10. How many times greater is the first 4 than the second 4 in the number 4 042?

Expanded Notation

Teaching Point 1:

Express 620 184 in expanded notation?

Thousands			Ones		
HT	TT	Th	H	T	O
6	2	0	1	8	4
600 000 6 × 100 000	20 000 2 × 10 000	0 0 × 1 000	100 1 × 100	80 8 × 10	4 4 × 1

620 184 = 600 000 + 20 000 + 0 + 100 + 80 + 4

or

620 184 = (6 × 100 000) + (2 × 10 000) + (0 × 1 000) + (1 × 100) + (8 × 10) + (4 × 1)

Activity 1:

Write the numerals in expanded notation.

1. 34 **2.** 86 **3.** 1 789

4. 4 530 **5.** 72 109 **6.** 587

7. 123 549 **8.** 711 **9.** 5 639

10. 23 000 **11.** 981 177 **12.** 27 863

13. 1 000 000 **14.** 634 179 **15.** 200 000

16. 23 901 **17.** 100 023 **18.** 300 050

19. 7 030 **20.** 802 104 **21.** 570 206

Activity 2:

Write the missing numerals.

1. ☐ = (4 × 10) + (9 × 1)

2. ☐ = (7 × 100) + (0 × 10) + (5 × 1)

3. ☐ = (1 × 1 000) + (3 × 100) + (2 × 10) + (0 × 1)

4. ☐ = (3 × 10 000) + (4 × 1 000) + (1 × 100) + (9 × 10) + (3 × 1)

5. ☐ = (5 × 100 000) + (9 × 10 000) + (3 × 1 000) + (2 × 100) + (1 × 10) + (7 × 1)

6. ☐ = (6 × 100 000) + (0 × 10 000) + (0 × 1 000) + (7 × 100) + (0 × 10) + (1 × 1)

7. ☐ = (1 × 100 000) + (5 × 10 000) + (0 × 1 000) + (0 × 100) + (9 × 10) + (9 × 1)

8. ☐ = (9 × 10) + (9 × 1)

9. ☐ = (9 × 10 000) + (1 × 1 000) + (1 × 100) + (5 × 10) + (0 × 1)

10. ☐ = (1 × 100 000) + (4 × 100) + (3 × 1)

11. ☐ = (9 × 10 000) + (5 × 1 000) + (6 x 10)

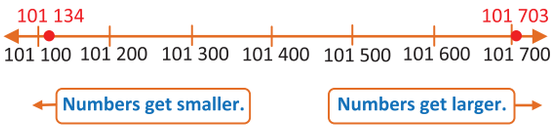
12. ☐ = (5 × 100 000) + (1 × 1)

Compare and Order Numbers

Teaching Point 1:

According to the 2011 Population and Housing Census, Diego Martin has a total population of 101 703 persons and Princes Town has a total population of 101 134 persons. Which region has a larger population?

Compare using a number line.



101 703 is to the right of 101 134.

So, 101 703 > 101 134.

Compare using place value.

HT	TT	Th	H	T	O
1	0	1	1	3	4
1	0	1	7	0	3

The **hundred thousands**, the **ten thousands** and the **thousands** are the same.

7 hundreds is more than 1 hundred.

So, 101 703 is more than 101 134.

101 703 > 101 134

Activity 1:

Compare the numbers. Use >, < or =.

1. 24 ◯ 48
2. 145 ◯ 138
3. 579 ◯ 579
4. 2011 ◯ 2008
5. 9074 ◯ 978
6. 21 100 ◯ 21 100
7. 111 411 ◯ 49 998
8. 215 417 ◯ 67 999
9. 874 510 ◯ 900 000
10. 74 673 ◯ 101 004
11. 1 000 000 ◯ 999 238
12. 678 849 ◯ 678 900

Copy and write the missing digit to make the number sentence true.

13. 658 637 > ☐ 00 000
14. 912 185 < 912 ☐ 85
15. 82 290 = 82 2☐ 0
16. ☐ 5 000 < 31 000

The table below shows the total population for each region.

Region	Total Population
Port of Spain	36 963
Arima	33 807
San Fernando	50 208
Chaguanas	84 316

17. Which region has the smallest population?

18. Which region has the largest population?

19. Which regions has more persons than Port of Spain?

Teaching Point 2:

*Write the following numerals in **ascending order, smallest** first.*

678, 3 125, 98, 21 000

HT	TT	Th	H	T	O
			6	7	8
		3	1	2	5
				9	8
	2	1	0	0	0

First, compare the **values** of the digits in each numeral. Then, order the numbers.

Answer: 98, 678, 3 125, 21 000

Activity 2:

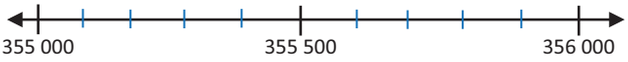
Write the following groups of numerals in ascending order, smallest first.

1. 90, 7, 35, 89
2. 243, 209, 218, 250
3. 4 891, 1 345, 6 180, 3 408
4. 900, 6, 7 921, 28
5. 23, 10 321, 355, 4 098
6. 12 098, 50 900, 32 999, 21 751
7. 16 830, 82, 400 000, 210
8. 7 502, 6 793, 6 723, 7 593
9. 80 371, 15 048, 80 137, 15 840
10. 32 463, 32 482, 32 947, 32 782
11. 849 551, 940 039, 941 100, 849 399

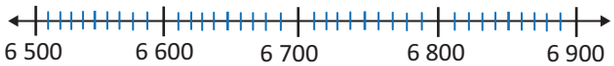
Use the number lines to order the numbers from least to greatest.

12. 26 905, 26 505, 27 800

13. 355 200, 355 000, 355 900



14. 6 783, 6 505, 6 810, 6 650



Teaching Point 3:

Write the following numbers in ***descending order, largest*** *first.*

7 651, 462, 11 671, 67

HT	TT	Th	H	T	O
		7	6	5	1
			4	6	2
	1	1	6	7	1
				6	7

First, compare the **values** of the digits in each numeral. Then, order the numbers.

Answer: 11 671, 7 651, 462, 67

Activity 3:

Write the following numerals in descending order, largest first.

1. 70, 17, 45, 59
2. 562, 115, 788, 350
3. 1 990, 8 845, 4 154, 9 768
4. 345, 9, 1 621, 75
5. 59, 30 300, 476, 1 450
6. 67 056, 79 987, 53 954, 43 073
7. 54 609, 23, 126 022, 897
8. 8 435, 7 853, 8 584, 5 487
9. 20 371, 51 048, 48 137, 20 840
10. 46 463, 46 482, 46 947, 46 782
11. 489 551, 409 039, 419 100, 498 399

Solve the problems below.

12. Use the digits 3, 4, 5, 6 and 8 to create four five-digit numerals. Use each digit exactly once in each numeral. Order the numerals from *largest* to *smallest*.

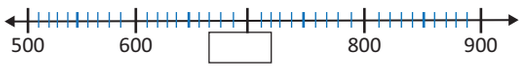
Use the data from the table for Questions 13 and 14.

Funds Raised at Food Stalls	
Name of Stall	**Funds raised**
Cake Stall	$3 235
Hot Dog Stand	$3 523
Ice Cream Stall	$3 532

13. List the food stalls in order from greatest to least amount of funds raised.
14. If the Roti Stall raised $3 332, how would the list change?

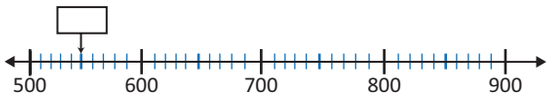
Teaching Point 4:

Write the missing numbers on the number line.



The number line is divided into hundreds.

So, the missing number is 700.

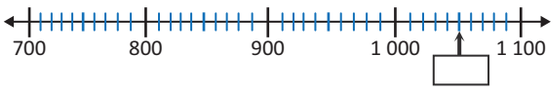


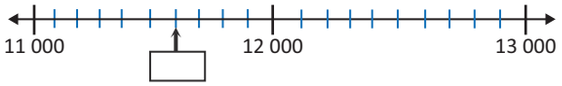
The missing number is halfway between 500 and 600.

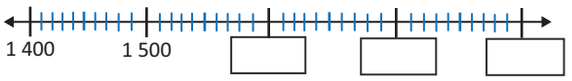
So, the missing number is 550.

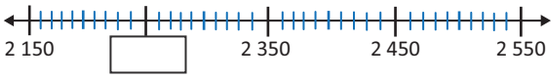
Activity 4:

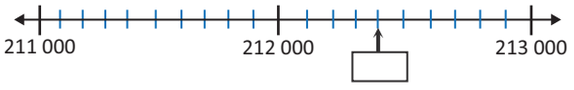
Write the missing numbers on the number lines.

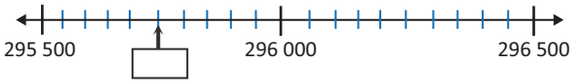
1. 

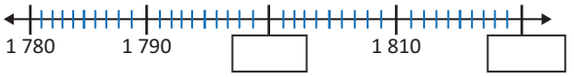
2. 

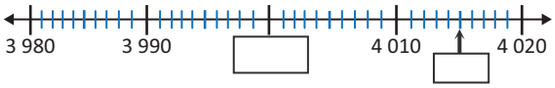
3. 

4. 

5. 

6. 

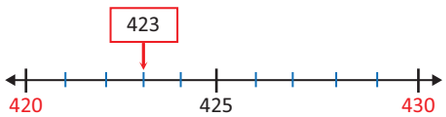
7. 

8. 

Rounding

Teaching Point 1:

Round 423 to the nearest ten.



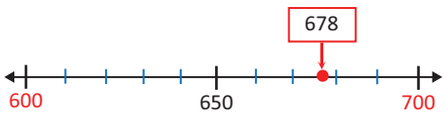
423 is nearer to 420 than to 430.

tens place ↓ 4**2**3 4**2**0

The digit to the right of the tens place is less than 5. Leave 2 tens and change the ones to zero.

Answer: 420.

Round 678 to the nearest hundred.



678 is nearer to 700 than to 600.

hundreds place ↓ **6**78 **7**00

The digit to the right of the hundreds place is more than 4. Add 1 to the hundreds and change the tens and ones to zeros.

Answer: 700.

Round 34 590 to the nearest thousand.

34 590 is nearer to 35 000 than to 34 000.

thousands place ↓ 3**4** 590 3**5** 000

The digit to the right of the thousands place is more than 4. Add 1 to the thousands and change the hundreds, tens and ones to zeros.

Answer: 35 000.

Activity 1:

Round the following numbers to the nearest <u>ten</u>.

1. 54	**2.** 76	**3.** 89
4. 535	**5.** 109	**6.** 583
7. 544	**8.** 711	**9.** 639
10. 3 312	**11.** 1 176	**12.** 7 863
13. 34 565	**14.** 64 189	**15.** 211 254

Activity 2:

Round the following numbers to the nearest <u>hundred</u>.

1. 124	**2.** 362	**3.** 809
4. 478	**5.** 716	**6.** 549
7. 1 643	**8.** 4 891	**9.** 6 394
10. 3 402	**11.** 1 276	**12.** 7 833
13. 21 565	**14.** 42 189	**15.** 300 354

Activity 3:

Round the following numbers to the nearest <u>thousand</u>.

1. 1 246	**2.** 4 662	**3.** 8 109
4. 4 678	**5.** 7 716	**6.** 5 249
7. 1 543	**8.** 4 091	**9.** 6 264
10. 13 402	**11.** 41 276	**12.** 27 833
13. 28 065	**14.** 491 189	**15.** 300 654

Activity 4:

Solve the problems below.

1. The distance between Trinidad and Jamaica is 1 930 km. What is the distance in kilometres to the nearest thousand?
2. Dillon rounded the number 34 890 to the nearest hundred. He wrote 34 800. Find and correct his mistake.
3. Mr. Lee bought a car for $88 575. To the nearest thousand, how much did the car cost?

Use the data from the table for Questions 4-6.

Students Sitting SEA	
Year	**Number of Students**
2012	17 916
2013	16 125
2014	18 039
2015	18 357

4. Which year had about 18 400 students rounded to the nearest hundred?
5. What is the number of students sitting the exam in the year 2014 rounded to the nearest thousand?
6. In which years did approximately 18 000 students sit the examination?

Chapter Review

Solve the problems below.

1. The greatest place value in a 6-digit number is the _____ place.
2. 10 000 greater than 75 250 is _____.
3. _____ is 40 000 less than 43 987.
4. Jayelle has $4 500 in her bank account. She withdrew $1 000 dollars from the account. How much money has she left?
5. Write the numeral for four hundred and sixty-five thousand, seven hundred and fifteen.
6. In 2011 the number of males living in Trinidad and Tobago was 665 119 and the number of females was 659 580. Which group was larger?
7. Write the number that stands for 6 ones, 8 hundreds, 0 tens, 12 thousands.
8. Arrange these numbers in order starting with the largest first: 721 643, 712 643, 732 614
9. Mrs. Roberts bought a television for $14 395. Approximate the cost of the television to the nearest thousand?
10. Which is the value of the 7 in the number 798 610?

    a) 7 b) 7 000

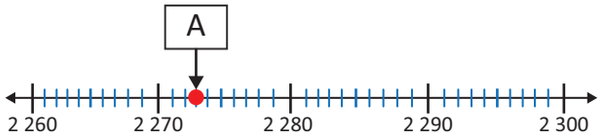
    c) 70 000 d) 700 000
11. How many thousands are there in one million?
12. Malachi has $10 000 in one hundred dollar bills. How many bills does he have?
13. Mummy deposited the following bills in her bank account:

    15 one-hundred dollar bills

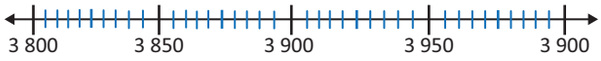
    20 ten dollar bills

    14 one dollar bills

    What was the sum of money that mummy deposited in her account?
14. Write a four-digit numeral that has a digit with the value of 3 000 and another digit with a value of 500.
15. What number will fit at the point A on the number line below?



16. Find and correct the error in the number line below.



17. David checked the price of a PlayStation at three toy stores.

    Store 1: $2 495

    Store 2: $2 549

    Store 3: $2 459

    At which store should he purchase the toy if he wants to spend the least amount of money?
18. In the number 12 562, how many times is the value of the digit in the ten thousands place greater than the digit in the ones place?