CRCT Math Review Lessons

Millions Period — Thousands Period — Ones Period

1) 6 7 4 , 2 4 9 , 8 3 2

- ones place and value of 2
- tens place and value of 30
- hundreds place and value of 800
- one thousands place and value of 9,000
- ten thousands place and value of 40,000
- hundred thousands place and value of 200,000
- one millions place and value of 4,000,000
- ten millions place and value of 70,000,000
- one hundred millions place and value of 600,000,000

Written Form = six hundred seventy-four million, two hundred forty-nine thousand, eight hundred thirty two

Note: It is written exactly how it is spoken.

Expanded Form = 600,000,000 + 70,000,000 + 4,000,000 + 200,000 + 40,000 + 9,000 + 800 +30 + 2

Standard Form = 674,249,832

Helper: Create a number to the hundred millions place. Have your child identify the values of its digits, write it in word form, expanded form, and standard (normal) form, and identify periods and place value spots.

2) When comparing numbers, always start at the left and move to the right. As soon as one has a larger digit, it is considered larger.

| 4 | 3 | 6 | 2 |
| 4 | 3 | 4 | 9 |

t	t	6
i	i	to
e	e	4

So, 4,362 > 4,349

Be careful of numbers that go to a higher place value spot.

436,295 > 56,394

4 is less than 5, but there are 0 hundred thousands in 56,394

Compare to the same place value spot. There are zero (0) hundred thousand in 56,394

Helper: Have your child compare numbers up to the millions period. Make sure they go left to right and always compare to the same place value spot.

3) Compare more than two numbers by rewriting the numbers vertically.

   Example: Order these numbers from least to greatest.

   68,493 ; 62,349 ; 621,325 ; 68,901

   68,493
   62,349
   621,325 (*)
   68,901

   Step 1 – (*) This had more place value spots and is the largest. Cross it our a place it at the end.
   Step 2 – The 4 in 68,943 is less than the 9 in 68,901. So the answer equals…

   62,349 ; 68,493 ; 68,901 ; 621,325

   Helper: Create an additional set of numbers and have your child order them.

4) When rounding numbers, round at the place value spot that is specified. If none are specified, go to the highest place value spot.

   Example 1: Round to the nearest hundred.

   4 9 4   Look one spot to the right. If it is a 5 or larger, round UP. If it is 4 – 0, round down. Be careful, do not round to less than the place value spot. Answer 500.

   Example 2: Round **3** 4 6 The **4** means round down. Answer equals 300

   200   300   400   500   600   700
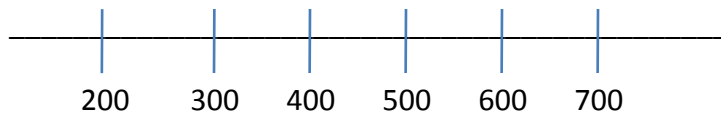
   Do no round down past 300 to 200. 300 is closer to 346 than 200.

   Example 3: Round 4,597 to the nearest hundred.   One spot to the right is a 5 or bigger.

   The hundreds place is the 5 no the 4   4 ,5**9**7

                                                                            Round up

   a. 4,600 ← Correct Answer
   b. 5,000 ← Wrong Answer, rounded to the nearest thousand, but it said to hundreds place.
   c. 4,500 ← Wrong Answer, rounded down.
   d. 4,590 ← Wrong Answer, rounded down and to wrong place value
   e.   600 ← This is also Wrong. You can't drop the thousands.

   Helper: Have your child round numbers to various place value spots.

5) When estimating for addition or subtraction, round the numbers before adding or subtracting. With word problems, the words about or enough clue you to estimate.

   Example: About how much more is 3,976 than 2,138

   Answer: 4,000 – 2,000 = 2,000

   Helper: Have your child estimate addition and subtraction problems.

6) For word problems, **in all**, **total**, and **altogether** are clue words to add. **Are left** are clue words for take away subtraction. **Many more** and **than** are clue words for comparative subtraction.

   Example 1:   Jan caught 4 fish. Erika caught 3 fish. How many fish did they catch in all?

   Answer: 4 + 3 = 7

   Example 2:   Jan caught 4 fish. She released 3 fish. How man fish are left?

   Answer: 4 – 3 = 1

   Example 3:   Jan caught 4 fish. Erika caught 3 fish. How many more did Jan catch than Erika?

   Answer: 4 – 3 = 1

   Helper: Have your child write examples of all three of those word problems.

   Note: For the next section, ask the problems in the same word problem form.

7) For subtraction with regrouping, use place value terminology. Borrow to the left. Only borrow when the top number is less than the bottom.

   3,962 – 1,385 = ?   Rewrite vertically   ⟶   3,962   The 2 is smaller than the 5.
                                                    - 1,385   Borrow from the tens. The tens
                                                                borrow from the hundreds.

              8 15 12
            3 ,⁹⁶⁷⁄₂
   Answer: -1 , 3 8 5
            2 , 5 7 7   The 3 did not need to be borrowed from because you
                          could subtract 8 – 3 = 5.

                                                              Borrow. You can't do 1 – 4.

   Watch out for zeros!!!!   8 ,0 1 6 ⟵ Don't borrow. You can do 6 – 2.
                                                  -2 ,3 4 2
                          9   4
                  ⟶   7 10 11 ⟵
   A thousand was   8 ,0 1 6   A hundred was   There was a 0 in the hundreds.
   borrowed to   -2 , 3 4 2   borrowed to add   Borrow from the thousands instead.
   10 hundreds.   5 , 6 7 4   to the 1 ten = 11
                                     tens

   Helper: Have your child do more subtraction problems. Have them explain why and how they borrow as they do it.

8) An expression has number and operation signs, but no equal signs are included.

$$4 + 3$$

An equation also has an equal sign and answer.

$$4 + 3 = 7$$

addend   sum

A variable is a letter that represents a number.

Example 1:   4 + N

Alex had 4 oranges. He got some more.

Example 2:   4 - N

Alex had 4 oranges. He lost some.

Helper: Give your child word problems with variables. Have him write the expression.

9) With input/output tables, find the patterns, state the rule, and extend the pattern.

Input	2	3	6	12
Output	7	8	11	□

It starts with input. The output is like the answer.

Equation = x + 5 = y

The input is like "x".
The output is like "y".

We added 5 to go from 2 to 7.
Rule = Add 5   □ = 17

Helper: Create rules. Have your child create input and output tables and equations to match it.

10) A pictograph uses a symbol to represent a larger amount.

DOGS IN HOMES

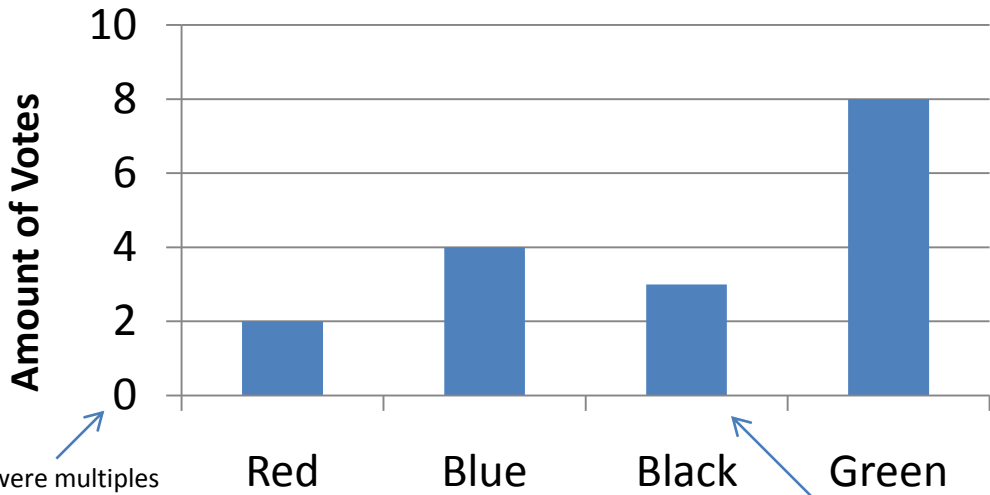| House 1	
House 2	
House 3	

Key: Each   = 2 dogs

Be careful! Use the key!
House 1 has 4 dogs not 2.

House 3 has 5 dogs. The half symbol is 1 dog.

A bar graph measures an amount using bars. Make your scale go from 0 to the largest number on the graph. Try to make your interval be a number that is a multiple of all the samples.

Students' Favorite Colors

Amount of Votes

Since most votes were multiples of 2, I made my intervals 2.

This is 3.

What if the votes were red = 5, blue = 10, black = 5, and green = 15?
Then the best interval would be 5 because they are all multiples of 5.
What if they were red = 20, blue = 10, black = 40, and green = 30? Best interval _____

Helper: Give your child amounts. Have them tell you what the symbol amount would be on a pictograph or the interval amount should be on a bar graph.

11) With double bar graphs, make sure to answer the exact question that is asked. These graphs are used to compare things. They have a key.
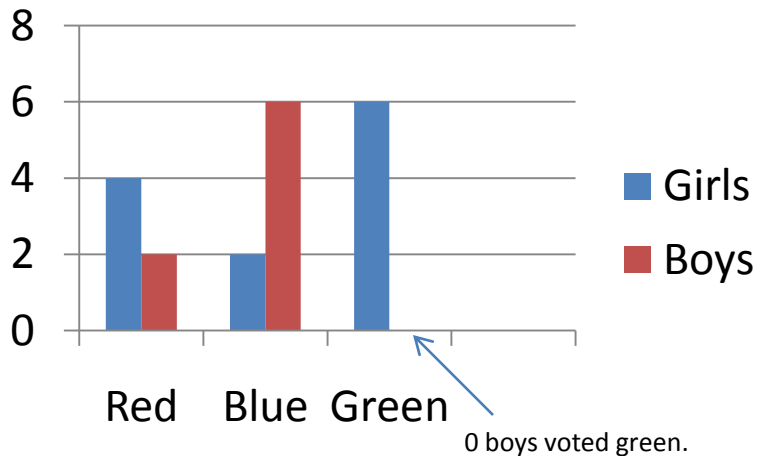
Example 1: How many more girls voted for red than boys? 4 – 2 = 2

Example 2: How many girls voted?
4 + 2 + 6 = 12

Example 3: How many children voted?

12 + 2 + 6 = 20

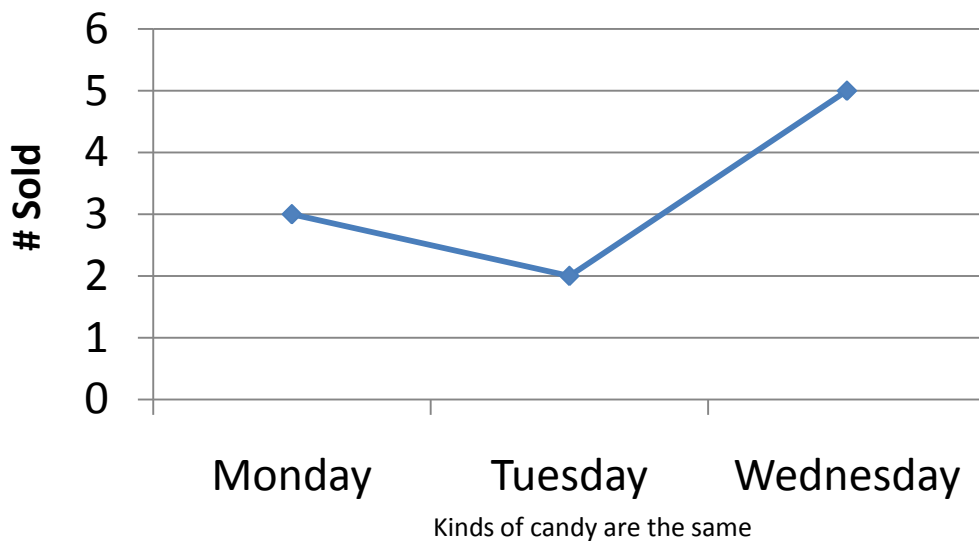boys

Students' Favorite Colors

Girls

Boys

0 boys voted green.

Helper: Ask more questions about this double bar graph.

12) Line graphs are the **best** graphs for measuring information over a period of time.
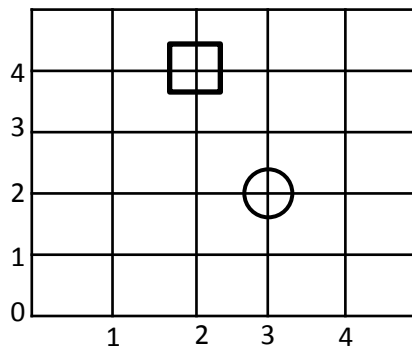
Candy Sales

Kinds of candy are the same

Helper: Have your child create a red line using apples sold on each of the days. Add a key and this will now be a double ling graph.

13) With coordinate grids (x,y), move along the bottom or run, then go up or jump.

The circle is at (3,2)

run   jump

The square is (2,4)

x = 2   y = 4

Helper: Place more shapes on the grid and have your child identify the x and y. Also, play a game of Battleship!
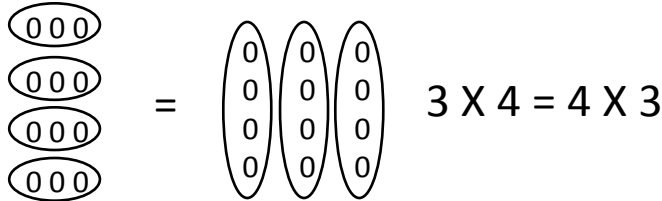
14) Multiplication Properties

$$4 \times 3 = 12$$

factors   product

Identity Property = The product of 1 and any number is that number $3 \times 1 = 3$

Zero Property = The product of any number and zero is zero $3 \times 0 = 0$

Commutative Property = You can multiply two factors in any order $3 \times 4 = 12$ or $4 \times 3 = 12$
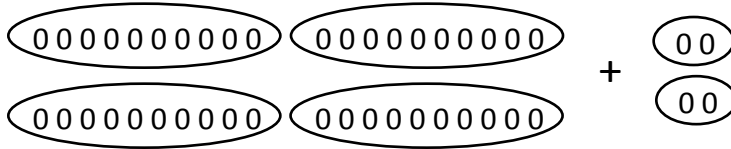
$$3 \times 4 = 4 \times 3$$

Associative Property = You can group factors in different ways $(2 \times 3) \times 4 = 2 \times (3 \times 4)$

$$(2 \times 3) \times 4 = 24$$

$$2 \times (3 \times 4) = 24$$

Distributive Property = $2 \times (10 + 2) = (2 \times 10) + (2 \times 2)$ or $2(10 + 2) = (2 \times 10) + (2 \times 2)$

$$24 \div 6 = 4$$

dividend   divisor   quotient

Fact Family

Inverse

$4 \times 6 = 24$
$6 \times 4 = 24$

$24 \div 6 = 4$
$24 \div 4 = 6$

Multiplying is adding groups of the same amount.
Dividing is splitting an amount into groups.
Clue words to multiply are **each**, **per**, and **a _____**.
For division, it is the same clue words, but they usually appear in the question.

Example 1: Ralph had 5 nets. 4 fish were in each net. How many fish were there?

$$5 \times 4 = 20$$

clue word

Example 2: <u>Ralph had **20 fish**. He put them equally into **5 baskets.**</u> How many fish are in each basket?

The **<u>expression part</u>** is always in the word problem. $20 \div 5 = 4$
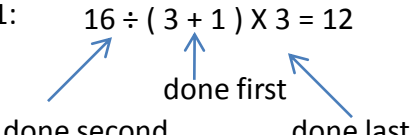
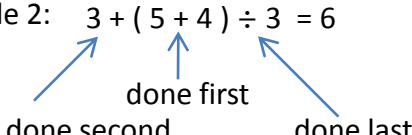Helper: Have your child write multiplication and division word problems.

15) The order of operations is parentheses ( ).

We don't do these in fourth grade ⟶ 4^2

Multiply   X
Divide   ÷   **>** Left to Right

Add   +
Subtract   -   **>** Left to Right

Example 1: $16 ÷ (3 + 1) X 3 = 12$

done first
done second   done last

Example 2: $3 + (5 + 4) ÷ 3 = 6$

done first
done second   done last

Helper: Have your child do some more orders of operation problems. If you are feeling very ambitious, write an order of operation problem and have your child write a word problem to match it.

16) Multiplication estimation is done by rounding the larger number to the highest place value and multiplying by the bottom number.

Example 1: $436 \ X \ 7 = 4\mathbf{00} \ X \ 7 = 2{,}8\mathbf{00}$ The zeros carry over.

Example 2: $496 \ X \ 7 = 5\mathbf{00} \ X \ 7 = 3{,}5\mathbf{00}$ The zeros carry over.

Example 3: $436 \ X \ 17$ This is more than 1 digit. Now you can round it.

$400 \ X \ 20$ so = $400 \ X \ 20 = 8{,}000$
$4 \ X \ 2 = 8$

Example 4: $436 \ X \ 4 = 400 \ X \ 4 = 1{,}600$ (correct)
           not $400 \ X \ 0 = 0$ (wrong)
           Don't ever round a single digit down.

17) To multiply by a 2-digit number, multiply by the ones first, then the tens.

Example:
```
   423  ← Multiply all on top by 4.
 X 34     Then put a zero place value spot.
 1692     Then multiply by the 3.
12690  ← Finally, add the two products.
14,382
```
Do not forget to put the zero!

Helper: Have your child try a 3 digit times 2 digit problem.

3 X 4 = 12   Carry the 1
2 X 4 = 8   Add the 1 = 9
4 X 4 = 16

Put the 0 place value spot.

3 X 3 = 9
2 X 3 = 6
4 X 3 = 12
Add the products.

18) To do division estimation, find compatible numbers.

Example 1:   Estimate **29**1 ÷ 7   Think   7 X 3 = 21 ...... too small
                                                      7 X 4 = 28
                          closest   7 X 5 = 35

                                          So   280 ÷ 7 = 40

Example 2:   Estimate **22**3 ÷ 6 = **24**0 ÷ 6 = 40
                          closest
              Close to 22 and compatible with 6 because 6 divides in evenly.

19) To do long division, divide, multiply, subtract, bring down, and repeat.

Example 1:
```
    166
 4| 664
  - 4↓
   ‾‾‾‾
    26
  - 24↓
   ‾‾‾‾
    24
```
6 ÷ 4 = 1 r2
26 ÷ 4 = 6 r2
24 ÷ 4 = 6

Example 2:
```
    116
 4| 464
  - 4↓
   ‾‾‾‾
    06
  - 04↓
   ‾‾‾‾
    24
```

Example 3:
```
    106
 4| 424  ←── Do not bring
  - 4↓         down the 4 until
   ‾‾‾‾        you have fully
    02         divided by 2.
  - 00↓
   ‾‾‾‾
    24
    24
   ‾‾‾‾
    0
```

Example 4:
```
    116r2
 4| 666
  - 4↓
   ‾‾‾‾
    26
  - 24↓
   ‾‾‾‾
    26
    24
   ‾‾‾‾
    2
```

Helper: Have your child work out more long division problems,

Easier concepts were skipped but will be reviewed in class. Fractions, decimals, and geometry were recently done in class and will only be reviewed in class.

Signatures

_____   The parent helped the student.
                              or
_____   A brother, sister, or relative helped the student.
                              or
_____   My child was capable of studying this on his/her own.