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Year 5 Term 1 Homework Solutions

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1 Year 5 Term 1 Week 1 Homework Solutions

1.1 Topic 1 — Hindu-Arabic Numerals

Our number system which we use today (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, etc.) are called **HINDU-ARABIC** numerals. Archaeologists and historians believe they were first developed about 2300 years ago (300 B.C. in India). This counting system was then taken by traders and scholars to Arabia. The Arabs invaded Spain in the eighth century, and the Hindu-Arabic system was widely used throughout Europe by 1100 A.D.

Exer	cise 1.1.1 Adding Whole Numb	bers
1.	7213 + 568 + 86072 + 3215 =	97068
2.	12305 + 124 + 4365 + 9120 =	25914
3.	$1092 + 3988 + 910 + 256 = _$	6246
Exer	cise 1.1.2 Subtracting Whole N	lumbers
1.	9681 - 2375 - 1230 =	6076
2.	$9008 - 2389 - 1325 = _$	5294
3.	1005 - 239 - 156 =	610
Exer	cise 1.1.3 Multiplying Whole N	lumbers
1.	$572 \times 125 = $ 71500	
2.	7804 × 85 = <u>66334</u>	0
3.	$1092 \times 205 = 22386$	60
Exer	cise 1.1.4 Dividing Whole Num	ibers
1.	$989 \div 43 = \underline{\qquad \qquad 23}$	
2.	$1512 \div 56 = \phantom{00000000000000000000000000000000000$	
3.	$3634 \div 23 = ___158$	

1.2 Topic 2 — Roman Numerals

Roman Numerals were very popular about 2000 years ago. The Roman number system is based on the idea of **addition** and **subtraction**.

• When a smaller numeral appears before a large one, it is **subtracted** from the large one:

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IV means 5 - 1 = 4
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XL means
$$50 - 10 = 40$$

• When a smaller numeral appears after the larger one, it is **added** to the large one.

VI means 5 + 1 = 6

LX means
$$50 + 10 = 60$$

• By repeating a numeral, its value is repeated.

$$XX = 10 + 10 = 20$$

$$XXX = 10 + 10 + 10 = 30$$

• By placing a bar over the numeral, its value is increased by 1000 times.

\overline{V}	= 5000	\overline{X}	= 10,000
\overline{L}	= 50,000	\overline{C}	= 100,000
\overline{D}	= 500,000	\overline{M}	= 1,000,000

The table below gives more details of the Roman numeral system:

Ι	II	III	IV	V	VI	VII	VIII	IX
1	2	3	4	5	6	7	8	9
Х	XX	XXX	XL	L	LX	LXX	LXXX	XC
10	20	30	40	50	60	70	80	90
C	CC	CCC	CD	D	DC	DCC	DCCC	СМ
100	200	300	400	500	600	700	800	900
М								
1000								

Example 1.2.1 Write the following Roman numerals in our numerals

- 1. $DCXXIV = \underline{624}$
- 2. CMXLV = 945
- *3. MCMXCV* = <u>1995</u>
- 4. $CCXLIX = \underline{249}$
- 5. MM = 2000
- 6. *MCMLXXXII* = <u>1982</u>

Exercise 1.2.1 Change the Roman numerals into Hindu-Arabic numerals:

<i>CCCL</i> =	350	
XXXV =	35	
	00	
<i>CXXX</i> =	130	
XXXVII =	37	
<i>MDL</i> =	1550	
DCLIV =	654	
CCCXL =	340	
XCII =	92	
MDLVI =	1556	
MCMLXV =	1965	
CDXCIX =	499	
MMXLIV =	2044	
	CCCL = XXXV = CXXX = XXXVII = MDL = DCLIV = DCLIV = CCCXL = XCII = MDLVI = MCMLXV = CDXCIX = MMXLIV =	CCCL = 350 $XXXV = 35$ $CXXX = 130$ $XXXVII = 37$ $MDL = 1550$ $DCLIV = 654$ $CCCXL = 340$ $XCII = 92$ $MDLVI = 1556$ $MCMLXV = 1965$ $CDXCIX = 499$ $MMXLIV = 2044$

Example 1.2.2 Change the following to Roman numerals

- 30 = <u>XXX</u>
 58 = <u>LVIII</u>
- *3.* 89 = <u>*LXXXIX*</u>
- 4. $349 = \underline{CCCXLIX}$
- 5. 1969 = <u>MCMLXIX</u>
- 6. $2044 = \underline{MMXLW}$

Exercise 1.2.2 Change the following Hindu-Arabic numerals into Roman numerals:

1.	36 =	XXXVI	
2.	106 = _	CVI	
3.	137 = _	CXXXVII	
4.	1234 =	MCCXXIV	
5.	2004 =	MMIV	
6.	56000 =	= <u>LVI</u>	
7.	880 = _	DCCCLXXX	Y
8.	1275 =	MCCLXXV	
9.	962 = _	CMLXII	
10.	5520 =	$\overline{V}DXX$	
11.	2025 =	MMXXV	
12.	1607 =	MDCVII	

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1.3 Topic 3 — Place Value

Our number system today is based on the Hindu-Arabic system where the **value** of a number is determined by its **place** in a particular column. For example, what does 3,520,697 really mean? The place value of 2 is 20,000 or twenty thousand. The place value of 6 is 600 or six hundred.

There are four ways or notations of describing a whole number:

1. AS AN ORDINARY NUMERAL:

3,520,697

2. IN WORDS:

Three million, five hundred and twenty thousand, six hundred and ninety seven.

3. IN EXPANDED NOTATION:

 $(3 \times 100000) + (5 \times 10000) + (2 \times 1000) + (0 \times 1000) + (6 \times 100) + (9 \times 10) + (7 \times 1)$

4. IN EXPONENTIAL NOTATION:

 $(3 \times 10^{6}) + (5 \times 10^{5}) + (2 \times 10^{4}) + (0 \times 10^{3}) + (6 \times 10^{2}) + (9 \times 10^{1}) + (7 \times 1)$

- 1. Write the following in expanded form:
 - (a) $3245 = (3 \times 1000) + (2 \times 100) + (4 \times 10) + (5 \times 1)$
 - (b) $1085 = (1 \times 1000) + (8 \times 10) + (5 \times 1)$
 - (c) $76189 = (7 \times 10000) + (6 \times 1000) + (1 \times 100) + (8 \times 10) + (9 \times 1)$
 - (d) $4365 = (4 \times 1000) + (3 \times 100) + (6 \times 10) + (4 \times 1)$
 - (e) $7694 = (7 \times 1000) + (6 \times 100) + (9 \times 10) + (4 \times 1)$
- 2. Write the following in basic numeral form:
 - (a) $3 \times 10^2 + 5 \times 10 + 6 \times 1 = 356$

(b)
$$4 \times 10^3 + 6 \times 10^2 + 7 \times 10 + 3 \times 1 =$$
 4673

- (c) $7 \times 10^5 + 3 \times 10^4 + 6 \times 10^2 + 9 \times 10 + 8 \times 1 =$ ______730698
- (d) $4 \times 10^4 + 2 \times 10^2 + 9 \times 1 = 40209$
- (e) $5 \times 10^3 + 8 \times 10^2 + 5 \times 1 = 5805$

1.4 Topic 4 — Rounding Off

In some situations in Maths, particularly when using a calculator, we do not require the exact answer, but an approximate answer only. The question will then ask you to **round off** the given number or answer to a certain place value. This place value might be to the nearest hundred or thousand etc.

Example 1.4.1 Round off 673 to the nearest hundred.

The number has 6 hundreds. Therefore it will round off to either 600 or 700. But 673 is closer to the 700 than it is to the 600. Therefore 673 rounds off to 700.

Example 1.4.2 Round 7499 to the nearest thousand.

The number has 7 thousands. Therefore it will round off to either 7000 or 8000. But 7499 is closer to the 7000 than it is to the 8000. Therefore 7499 rounds off to 7000. If the question had been 7500 then the digit 5 is always considered to be closer to the next highest number. Therefore 7500 rounds off to 8000.

Example 1.4.3 Round 438 251 to the nearest ten thousand.

The number has 43 lots of ten thousands. Therefore it will round off to either 430 000 or 440 000. But 438,251 is closer to the 440 000 than is to the 430 000. Therefore 438 251 rounds off to 440 000.

Exercise 1.4.1 Round off the following numbers to the nearest 100:

1.	749 =	700
2.	751 =	800
3.	750 =	800
4.	1767 =	1800
5.	23086 =	23100
Exer	cise 1.4.2 Round of	f the following numbers to the nearest 1000:
1.	5731 =	6000
2.	23456 =	23,000
2	87500 -	88,000

4. 120501 = _____121,000

1.5 Problem Solving (Numeration)

Exercise 1.5.1

1. When a certain number is multiplied by 5 and 7 is added, the result is 32. What is the number?

Solution:
$$5 \times N + 7 = 32, \Rightarrow 5N = 25, \Rightarrow N = 5.$$

2. When a certain number is added on to itself the result is 136. What is the number?

Solution:	$N+N=136, \Rightarrow \ 2N=136, \Rightarrow \ N=68$	
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3. Kevin has twice as many two-dollar coins in his pocket as one-dollar coins. The total value of these coins is \$25. How many coins of each kind does he have?

4. The sum of five consecutive numbers is 50. What is the smallest number?

Solution: $N + (N + 1) + (N + 2) + (N + 3) + (N + 4) = 50, \Rightarrow 5N + 10 = 50 \Rightarrow 5N = 50 \Rightarrow N = 8.$

5. When a certain number is divided by 7 and decreased by 7 the result is 7. What is the number?

Solution:
$$N \div 7 - 7 = 7$$
, $\Rightarrow N \div 7 = 14$, $\Rightarrow N = 14 \times 7 = 98$.

6. The smaller of two numbers is 36. Their difference is 17. Find the larger number.

Solution:
$$N - 36 = 17, \Rightarrow N = 17 + 36 = 53$$

7. The smaller of two numbers is 18. Their sum is 43. What is the difference between the two numbers?

Solution: N + 18 = 43 N = 43 - 18 = 25, \Rightarrow difference = 25 - 18 = 7.

8. Add the sum of 74 and 47 to their difference. What is the answer?

Solution: (74+47) + (74-47) = 148.

1.6 Test Paper 1

1.6.1 Part A — Quick Questions

1. How many fifths in 10 wholes? $10 \div \frac{1}{5} = 10 \times 5 = 50$
2. Find the sum of 75 c and \$0.35. $\$0.75 + \$0.35 = \$1.10$
3. How many fours are there in 72? $74 \div 4 = 18$
4. How many hundreds in half a million?5000
5. Find the average of the first ten consecutive numbers. $55 \div 10 = 5.5$
6. How many years are there in 8 decades? <u>80 years</u>
7. How many quarters are there in $3\frac{1}{4}$? $3\frac{1}{4} \div \frac{1}{4} = \frac{13}{4} \times \frac{4}{1} = 13.$
8. From 4 times 7, take away half of 14. $4 \times 7 - 7 = 21$
9. What is the remainder when 124 is divided by 6? $124 \div 6 = 20R4$
10. $\frac{1}{4}$ of 5 dozen eggs = $\frac{1}{4} \times 5 \times 12 = 15$
11. To the sum of 4 and 7, add their product. $4+7+4\times7=39$
12. How many days altogether in July, August and September?92 days
13. How many minutes are there from 9.05 a.m. to 4.00 p.m.? <u>6hrs 55 min = 415 minutes</u>
14. Change from \$10 after spending \$3.72? \$6.28
15. Find $11^2 + 12^2 + 13^2 = 121 + 144 + 169 = 434$
16. Find 35% of \$1.60. $35\% \times 1.60 = 0.56
17. How many metres are there in 3.06 kilometres? <u>3060 m</u>
18. Halve 18 and square the result. $\left(\frac{18}{2}\right)^2 = 81$
19. How many centimetres are there in a $\frac{1}{4}$ metre?25 cm
20. What is the value of 6 in 435623? 600

1. Find the sum of all the numbers from 1 to 200.

Solution:
$$1 + 2 + 3 + \ldots + 199 + 200, \Rightarrow (1 + 200) \times \frac{200}{2} = 20100$$

2. One fifth of my 175 marbles were lost. How many do I have now?

Solution: four fifth of 175 is left $\Rightarrow \frac{4}{5} \times 175 = 140$ marbels.

3. What do you get when you double the number that is 23 bigger then 74?

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Solution: (23+74) \times 2 = 194.
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4. The next number in the sequence $1, 5, 13, 29, \ldots$ is :

Solution:	$14 + 9 + 16 + 29 \rightarrow 20 + 29 - 61$
Solution	$+4 + 6 + 10 + 52 \Rightarrow 29 + 52 = 01.$

5. When you add two numbers you get 15, and when you multiply them you get 54. What would you get if you subtracted the smaller of the two numbers from the larger one?

Solution: $A + B = 15 \ A \times B = 54, \Rightarrow A = 9, \text{ and } B = 6, \ A - B = 9 - 6 = 3.$

6. 12.34 is how many times bigger than 0.1234?

Solution: $12.34 \div 0.1234 = 100$ times bigger.(two decimals different)

7. If one pizza is enough for 5 people, how many are needed for a party of 36 people?

Solution:	$36 \div 5 = 7R1, \Rightarrow \Rightarrow$ we need 8 pizza.	
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8. If a discount of 24% is given on an item selling for \$125, what is actually paid for the item?

Solution: discunt 24%, \Rightarrow paid 76% \Rightarrow Paid = $125 \times 76\% =$ \$95.

9. Which one is largest? A. 0.54 B. $\frac{1}{2}$ C. 55% D. $\frac{4}{7}$

1.6.3 Part C — Extension Questions

- 1. I am thinking of two numbers. When I add them the sum is 9, and when I multiply them the product is 20. My numbers are ______4 and 5______
- 2. I think of a number, double it, add 8 to the result and my answer is 22. My number is $2N + 8 = 22 \implies N = 7$
- 3. Raymond and his sister, Jessica, collect stamps. Jessica has 12 more stamps than Raymond, and together they have 198 stamps. How many stamps does Raymond have?

Solution: Raymond has $\frac{198 - 12}{2} = 93$ stamps

- 4. What are the missing numbers in the following pattern? <u>A = 7, $B = 6 \Rightarrow$ rule = $\times 2 1$.</u>
- 5. In the following equations, the letters represent different digits. What is the value of each letter?

(a) $S \times S = S + S$	S =	S = 2
(b) $H + H + H + H = 24$	H =	H = 6
(c) $M - M - M - M = 0$	M =	M = 0
(d) $N \times N \times N \times N = 1$	N =	<i>N</i> = 1
(e) $P \times P + 3 = 28$	P =	P = 5
(f) $19 - Q + 2 \times 3 = 12$	Q =	Q = 13

6. I have 3 piles of coins, and there are 19 coins altogether. The third pile has twice as many coins as the first, and one more coin than the second. How many coins are in each pile?

Solution: 4, 7 and 8	
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7. William walks 40 metres in 30 seconds. If he walks at the same speed, how far will he walk in one and a quarter hours?

Solution: 40 m/30 seconds, $\Rightarrow 80 m/\min$, $80 \times 75 = 6000 m$ or 6 km.

1.6.4 Part D — Challenging Problems

1. Suppose today is Saturday. What day of the week will it be 50 days from now?

Solution:	Sunday.
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2. Find the sum of the counting numbers from 1 to 50 inclusive.

Solution:	$1 + 2 + 3 + \ldots + 50 = (1 + 50) \times \frac{50}{2} = 1275$	
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3. Kevin has 25 coins consisting of 10 c and 20 c coins. The total value of the coins is \$3.90. How many of each kind does he have?

Solution: $\begin{cases} A+B=25\\ 10 \times A+20 \times B=390 \end{cases} \Rightarrow \begin{cases} A=25-B,\\ 10 \times (25-B)+20B=390 \end{cases} \Rightarrow B=14, A=11.$ 11 ten cents coins and 14 twenty cents coins

4. The diagram below shows 2 rectangles A and B. Rectangle A is $\frac{1}{4}$ as long as rectangle B. If rectangle B has an area of 864 cm^2 , what is the perimeter of the whole rectangle?

12 cm	A	В

Solution:	The length of the rectangle B is $L_B = 864 \div 12 = 72 cm$	
	$L_A = \frac{1}{4} \times 72 = 18 cm, \Rightarrow P = (18 + 72 + 12) \times 2 = 204 cm$	

5. The four-digit number 1AA2 is divisible by 9. What digit does A represent?

Solution: 1 + A + A + 2 = 2A + 3, $\Rightarrow 2A + 3 = 9 \text{ or } 18$, $\Rightarrow A = 3$.

6. The bar graph below shows the number of people watching a particular movie at a cinema from Thursday to Sunday. Use this information to answer the following questions:



(a) Find the percentage of people who watched the movie on Saturday. Give your answer correct to two decimal places.

Solution: Total number of people = 140 + 180 + 220 + 200 = 740Percentage of people watched the movie on Saturday = $\frac{220}{720} \times 100\% = 29.73\%$

(b) What fraction of the people were children if there were 120 adults?

Solution:	number of children $= 740 - 620$
	fraction of the people were children $=\frac{620}{740}=\frac{31}{37}$.