Mathematics for Grade 5 Teachers

I. UNDERSTANDING NUMBERS BETTER

A. Read each of the following and then give the period, the place value and the value of the underlined 4, then tell how many times as great is the underlined 4 than the 4 that is not underlined.

1. 405 214
2. 746 400
3. 445 235
4. 5 624 742
5. 6 410 504
6. 4 042 318
7. 43 279 343 600
8. 106 654 492 870
9. 4 040 006 809

B. Fill in the missing numbers to complete the equations.

1. 3 612 = (_____ x 1 000) + (6 x 100) + (1 x _____) + (2 x _____).

2. 40 375 = (4 x _____) + (0 x 1 000) + (2 x _____) + (_____ x 1) + (14 x 10)

3. 3 200 169 = (_____ x 100 000) + (3 x 1 000 000) + (1 x 100) + (_____ x 10) + _____.

4. 567 148 = (5 x 100 000) + (65 x _____) + (2 x 1000) + (1 x 100) + (3 x _____) + (18 x _____)

C. Compare the numbers using > or <.

1. 3 862 _____ 3 682
2. 789 090 _____ 789 089
3. 29 million _____ 29 billion
4. sixty-five thousand _____ sixty thousand, five
5. 67 950 _____ 67 949
6. 321 026 501 _____ 312 026 501

D. Round each number to the nearest

	hundred	thousand	ten thousand	million
1. 5 356 078	_____	_____	_____	_____
2. 39 945 895	_____	_____	_____	_____
3. 8 961 952	_____	_____	_____	_____
4. 74 695 197	_____	_____	_____	_____
5. 652 445 995	_____	_____	_____	_____

E. Given: 465 918, write the number described.

a. _____ 5 000 less
b. _____1/2 the given number
c. _____ 200, 000 more than the number
d. _____ the largest number that can be formed by the digits
e. _____ the smallest number that can be formed by the digits

F. Write the standard notation.

1. $9 \times 10^3 + 11 \times 10^2 + 3 \times 10^1 + 3 \times 10^0$ _____
2. $5 \times 10^5 + 2 \times 10^3 + 1 \times 10^2 + 9 \times 10^1$ _____
3. $8 \times 10^7 + 5 \times 10^5 + 7 \times 10^6 + 3 \times 10^3 + 5 \times 10^2 + 3 \times 10^1 + 5 \times 10^4 + 2$ _____
4. $6 \times 10^{10} + 2 \times 10^6 + 4 \times 10^8 + 3 \times 10^2$ _____

G. a) Name the smallest and the largest whole numbers that rounds to
b) How many numbers round to the given number?

1. 60 to the nearest ten _____ _____
2. 700 to the nearest hundred _____ _____
3. 8 000 to the nearest thousand _____ _____

4. 30 000 to the nearest ten thousand _____ _____

5. 600 000 to the nearest hundred thousand _____ _____

H. Write the following in Roman Numerals or in Hindu Arabic to satisfy the equality.

Roman Numerals	Hindu-Arabic	Roman Numerals	Hindu-Arabic	Roman Numerals	Hindu-Arabic
1. CXXXIV	= _____	6. _____	= 84	11. LXXIII	= _____
2. _____	= 135	7. CDXCVI	= _____	12. _____	= 878
3. MCMXLV	= _____	8. _____	= 1 815	13. MDCCXXVI	= _____
4. _____	= 394	9. MCMLXXXVI	= _____	14. _____	= 795
5. MCDLXXI	= _____	10. _____	= 195	15. MDCCCLXXIV	= _____

I. Solve the following problems:

1. What number is five thousand more than one million?
2. What number is six hundred less than one hundred thousand?
3. How many times is 10 repeated as a factor in 1 000 000 000?
4. What is the value of 8 in 7 584 730?
5. What is the largest 10-digit number with 3 digits repeated once?
6. Give the smallest ten-digit number with 3 digits repeated once.
7. Write the number that is 900 less than the largest number that can be formed using all the digits?
8. What digit is not possible to place in the hundreds place in a three digit number?

Challenge!!!

A. 1. Who am I? My tens digit is 2 times my hundreds digit. My hundreds digit is 4. My ones digit is a factor of my tens and hundreds digits.

2. With the digits 4, 5, 8 and 9, write the smallest 6-digit number possible with at most 2 digits repeated twice.
3. Write the number that is 1 000 more than the difference between the largest number and the smallest number that can be formed using the digits 1, 2, 3, 4 and five.
4. What is the place value at which the number 789 945 856 rounds off to 790 000 000.
5. Write the largest seven-digit even number with no odd digits in it and no digit repeated more than twice.
6. How many periods does 53 trillion have?
7. Find the power of 6 that is nearest to 1 million.

B. 1. How many whole numbers can be rounded to 4 500?

2. How many two-digit numbers can you make with the digits 1, 2, 3, 7 if no digits may be repeated? How many of these are even? How many can be formed if any digit may be repeated?
3. My thousands digit is 3 times my ones digit. My hundreds digit is my ones digit plus 2. My tens digit is the difference between my thousands and hundreds digits. What numbers can I be?
4. In old-style printing, 440 digits were used to number the pages of a book. How many pages had the book?

5. If 6 apples are in a basket, how do you divide them among 6 girls so that each girl gets an apple and one apple remains in the basket?

II. UNDERSTANDING THE OPERATIONS BETTER

A. Find the sums and differences.

1. 103	2. 321	3. 4 065	4. 1 013	5. 741 million
+254	+ 657	+ 5 123	+ 5 486	+ 158 million
6. 684	**7. 781**	**8. 5 984**	**9. 38 911**	**10. 800 million**
-321	-343	- 3 637	- 17 201	- 541 million

1. 830	2. 720	3. 924	4. 573	5. 6 543	6. 8 034
x 4	x 5	x 7	x 8	x 27	x 17

7. 45) 64 350 8. 62)28 396 9. 2 436 × 6 10. 6 016 × 8 11. 1 386 × 7

B. Add the following horizontally. Can you give the answers orally?

1. 29 + 8 + 6 + 11 = _____
2. 24 + 6 + 5 + 19 = _____
3. 9 + 3 + 15 + 6 = _____
4. 24 + 27 + 16 = _____

C. Find each missing number.

1. 2 000 ÷ _____ = 50
2. 4 200 ÷ _____ = 70
3. _____ ÷ 600 = 540
4. _____ ÷ 800 = 610
5. 6 040 ÷ _____ = 151
6. 9 600 ÷ _____ = 160

D. Do these orally.

1. What is the difference between 35 and 16?
2. Subtract 17 from the sum of 23 and 28.
3. Add 17 to 28 and subtract their sum from 75.
4. What is the sum of 35, 26, and 49?
5. Add 7 to the difference of 56 and 28.

E. How skillful are you? Find the values of the following.

1. 72 – 3 x (32 ÷ 4) + 3 x 5 = _____
2. 3 x 4 x 8 ÷ 16 + 10 x 5 – 8 x 6 = _____
3. $2^3 + 2^5$ = _____
4. 3^3 x 1 000 + 40 x 10^2 = _____
5. $4^3 - 4^2$ = _____

F. Fill the empty boxes.

1. [ ] -7-> [ ] +13-> [ ] -9-> [ ] -8-> [10]
2. [ ] +9-> [ ] -7-> [ ] -13-> [ ] +8-> [23]
4. [ ] -9-> [ ] x3-> [ ] ÷9-> [6]
5. [ ] x4-> [ ] ÷8-> [ ] x5-> [30]

G. Fill each blank or replace " ? " With a digit so that the answer is correct.

1.
```
   __ 3 __
x     2 8
-------------
__ 4 __ 6
8 __ 4
-------------
1 2  2 3  6
```

2.
```
        7  ?
      ------
__ __) 4  9  5  8
       __ __ __
          5  4  __
          __ __ __
       ------------
             4  4
```

H. Solve the following problems:

1. Ron- Ron collected 354 eggs from their backyard poultry and 367 from their farm poultry. How many eggs in all did he collect? If 52 were broken, how many were available for the market?
2. Find a number so that if you add it to itself and then subtract 10, you have two more than the number.

3. In Santa's toy factory, it takes 45 minutes to assemble a teddy bear, 35 minute to assemble a toy horse, and 35 minutes for a doll. If Santa needs to prepare one sack more of presents containing 3 teddy bears, 4 dolls and a toy horse to complete his delivery on Christmas day, how long will it take for the factory to produce it?

4. If it takes 5 kg of cement to cover 10 sq. meters, how many kg of cement will be needed to cover a rectangular area 8 meters by 14 meters?

5. Mangoes cost ₱9.00 each. Can I buy a dozen with ₱120?

6. Miraflor was asked by mother to buy some watermelons. If a watermelon costs ₱ 92.00, how many can she buy with a ₱500? How much is her change?

7. Rolly wants to update his music. He bought 3 cassette tapes of his favorite artist at ₱90.00 each and 2 CDs at ₱100.00 each. How much change did he receive if he paid with 5 ₱100.00 bills?

8. The distance between my hometown and our school is 336 km. It takes the bus 8 hours to cover the distance, find the average speed of the bus.

9. Ms. Mateo is a front desk clerk at a hotel. If she earns ₱198, 000 a year, what is her monthly salary?

Challenge!!!

1. From a set of cups in 6 different colors and saucers in 4 colors, how many different colors of cup-saucer combinations can be formed.

2. North view Hotel offers a party package of ₱32, 500 for the function hall and for the lunch of 100 people. If the food is ₱7, 500 more than the rate of the function hall, how much did each cost?

3. The average of 12 numbers is 54. If 65 and 85 are added to the set, what will be the resulting average?

4. How many numbers greater than 1 and less than 100 give a remainder of 3 when divided by 5?

5. Ricky and Roy, together, have ₱246.00. If Roy has ₱24 less than twice the money of Ricky, how much money does each boy have?

6. The sum of two numbers is 157. One number is 17 more than the other. Find the two numbers.

7. The average of five numbers is 37. What could be the five numbers?

8. A rectangular school yard is 185 m long and 148 m wide.
   a. If you can walk at the rate of 55 m per minute, about how long will it take you to go once around the yard?
   b. At least how many complete runs around the yard must a long distance runner make to make sure he has run 5 kilometers?

B. 1. The product of the first 20 whole numbers (1x2x3...x20) is 2, 432, 902, 008, 176, 640, 000. Find the product of the first 19 whole numbers without actually multiplying.

2. The sum of 11, 12, ..., 28, 29 is 380. What is the sum of 31, 32,..., 48, 49?

3. A car is 4/7 full. After using 12 liters, it is only 2/5 full. How many liters does it hold when full?

III. UNDERSTANDING FACTORS AND MULTIPLES BETTER

A. Give the prime factorization of each number. Express the answer in exponential form.

1. 118 = _____ 6. 320 = _____

2. 725 = _____ 7. 360 = _____

3. 1998 = _____ 8. 2872 = _____

4. 1992 = _____ 9. 5400 = _____

5. 1800 = _____ 10. 3888 = _____

B. Find the GCF and LCM of the following:

	GCF	LCM		GCF	LCM
1. 36, 60, 96	_____	_____	6. 16, 12, 24	_____	_____
2. 30, 28, 40	_____	_____	7. 75, 45, 105	_____	_____
3. 8, 24, 36	_____	_____	8. 44, 22, 33	_____	_____
4. 118, 320	_____	_____	9. 280, 360	_____	_____
5. 144, 156	_____	_____	10. 320, 480	_____	_____

C. Determine if 2, 3, 4, 5, 6, 8, 9, or 10 is a factor of the following.

1. 96 2. 108 3. 960 4. 864 5. 351 6. 6480 7. 4860 8. 10,881

D. Read and find what is asked for.

1. If the factor 1 is included, how many common factors do 24 and 36 have?

2. What is $2^4 \times 3^2 \times 10^3$ in standard notation?

3. The smallest number between 1500 and 1600 that is divisible by 9 is _____

4. What is the largest a. 2-digit multiple b. 3-digit multiple of 7 which is divisible by 9?

5. How many prime numbers are there between a. 70 and 80? b. 80 and 100?

6. Which number has both 2 and 9 as factors? 6282, 7282, 8384.

7. What digit can you place in the blank so that 456,7_____2 is divisible by a. 9? b. 3?

8. What digit can you place in 56, 67_____ to make it divisible by 4?

9. The product of 32 x 31 is closest to which multiple of 10?

10. What are the 2 prime numbers closest to 100?

11. How many possible remainders are there when 11 is a divisor?

12. The even number 218 is twice an odd number. What is the odd number?

B. Problem Solving.

1. In a Math test, two students scored 96, five students scored 81, four students scored 74 and one student scored 55. Find the average of the students.
2. Four friends would like to buy 4 small pizzas worth ₱83.00 each. If Sheryll has ₱ 81.00, Michael has ₱82.00 and Jolie has ₱85.00, at least how much should Rhia have to pay for the pizza?
3. The average weight of Joy, Joyce and Jenny is 47 kg. If they weigh themselves including Jessica, their average weight is 45 kg. What is the weight of Jessica?
4. The average number of eight groups of candies is 15. If there are 21 red candies, 5 green candies, 6 white candies and 12 blue candies, what is the average of the other four groups of candies?
5. Mariella compared 9 different brands of ice cream and found that the average price of the 9 brands is equal to 254. As she was going through another store she found two other brands that cost ₱282.00 and ₱292.00 respectively. What will be the resulting average of the 11 brands?

Challenge!!!

A. Mystery numbers.

1. I am thinking of a number. If I add 7 to it and divide the result by 2, I get 13. What is the number?
2. If a number is multiplied by 6 and then 7 is subtracted from it, the result is 70. What is the number?
3. I am thinking of a number. Twice my number plus 5 equals 29. What is my number?
4. If the sum of 11, 12, 13, . . . , 28 and 29 equals 380, What is the sum of 41, 42, 43, . . . , 58 and 59?
5. My ones is 2 less than my tens and my hundreds is 3 more than my tens. What numbers can I be?

B. Analyze each problem and solve.

1. Grandmother is often visited by her grandchildren. In her garden there are some benches which the children would like to sit upon while listening to grandmother's stories. If 4 grandchildren were to sit on a bench, there will be 3 grandchildren who will not have a place. However, if 5 grandchildren are placed on each bench, there will be 2 empty places. What is the smallest number of grandchildren that grandmother could have?
2. My teacher gave me the number 171. She asked me to list all the two-digit numbers that divide 171 leaving a remainder of 6. Can you also find the numbers?
3. My age this year is a multiple of 7. Next year it will be a multiple of 5. I am more than 20 years of age but less than 80. How old will I be 6 years from now?
4. The four-digit number A 5 5 B is divisible by 6 without remainder. What is A + B?
5. Eliezar has a collection of shells whose number is between 1 and 100. He is planning on putting them in small boxes. If he will put them in 3 or 5 boxes, there will be a remainder of 1, but if he will put them in 7 boxes, they will be evenly distributed with no excess. How many shells in all does Eliezar have?

6. Find the greatest number that divides 364, 414 and 539 with the same remainder in each case?

7. 30! represents the product of all natural numbers from 1 to 30 inclusive: 1 x 2 x 3 x 5 x ... x 28 x 29 x 30

If the product is factored into primes, how many 5's will the factorization contain?

IV. UNDERSTANDING FRACTIONS BETTER

A. Perform the indicated operations.

1. 18 1/3 - 1 5/6 = _____
2. 6 5/7 + 8 3/5 = _____
3. 24/30 x 32/45 = _____
4. two-fifths of two-thirds of 60 = _____
5. 1/2 of 4/5 = _____
6. 2 4/15 x 6 1/4 = _____
7. 6/5 (2/3 - 3/10) = _____
8. 9 3/5 ÷ 4 3/4 = _____
9. $(2/3)^3$ = _____
10. 48 x 11/36 = _____

B. Arrange from smallest to largest.

1. 3/4, 1/2, 5/6 = _____
2. 15/17, 16/19 = _____
3. 5/12, 6/13, 8/15 = _____
4. 12/23, 13/24 = _____
5. 12/21, 11/22 = _____
6. 7/12, 9/14, 6/11 = _____

C. Fill in the blanks to make each equality true.

mixed no.	improper fraction	mixed no.	improper fraction	mixed no.	improper fraction
1. 3 2/5 =	_____	3. _____ =	23/5	5. 7 3/8 =	_____
2. _____ =	37/7	4. 12 1/6 =	_____	6. _____ =	103/9

D. Answer each of the following questions.

1. A number plus twice three-fourths of it equals 7. What is the number?

2. If the quotient of dividing a number by 9 is 3/20, what is the number?

3. Change a. 9/16 b. 3/4 c. 5/8 d. 23/32 to 64ths.

4. Reduce to lowest terms: a. 14/21 b. 24/32 c. 36/54 d. 56/84

5. What fraction is between a. 1/3 and 3/5? b. 2 1/3 and 3 3/4?

6. How many times as large is a third of a circle as a fourth of the circle?

7. What is the next number in the sequence 1/2, 3/4, 9/8, 27/16,..?

8. Find 3 fractions between a. 1/3 and 1/2 b. 3/4 and 4/5

E. Problem Solving

1. CDs cost ₱7.50 each. How many can you buy with ₱100.00?

2. The weights of Tina, Imelda and Cion are 38 1/2 kilos, 41 1/4 kilos, 37 3/5 kilos respectively. What is their average weight?

3. If 2/3 of a class of 420 Grade V students were not able to watch "Joseph, the Dreamer", how many watched the play?

4. September is the month of our fiesta. If our fiesta lasts for 12 days, what fraction of the month are not fiesta days?

5. In an achievement test, Rory answered 19/20 of the test questions correctly. If she answered 38 questions correctly, how many questions were on the test?

6. During the floods at a town, three sections of a school donated some rice weighing 22 1/2 kg, 27 2/3 kg, and 29 1/8 kg respectively. How many kg of rice did the three sections collect? What is the average kg of rice collected?

7. A carpenter working 8 1/2 hours a day can finish a job in 12 days. How many hours a day must he work to complete the job in 10 1/5 days?

8. How many 1/2 kg bags of sugar can be filled from a 50 kg bag?

9. Reggy can bike 14 1/2 km in 1 hr, how far can he bike in 3/4 hour?

10. Rina read the first page of a book in 1 1/4 min. The second page took her 1 1/3 times as long. How long did it take to read the 2nd page?

11. I was given a square handkerchief with a perimeter of 72 cm. What is the length of each side?

12. Jim had 9 apples. He gave each of his friends 3/4 of an apple and kept 3/4 of an apple for himself. How many friends did he have?

13. Four-fifths of a class prepared for a spelling contest and 1/4 of them qualified. What fraction of the class qualified for the contest?

Challenge!!!

1. A car traveled at 50 km/hr for 4 hours and at 60 km/hr for 3 hours.What was the average speed?

2. A car tank is 3/5 full. After using 6 liters, it is only 9/20 full. How many liters does it hold when full?

3. Of three numbers, two are 3 2/3 and 18/7. What should the third number be so that the average of all three is 3?

4. Find the smallest odd counting number, greater than 1, which has the following property: if it is divided by either 5 or 11, the remainder is 1?

6. The product of three natural numbers is 12. How many different sets of 3 numbers have this property if the order of the 3 numbers in a set does not matter?

7. When I open my Mathematics book, there are two pages which face me. If the product of the two page numbers is 1484, what are the two page numbers?

8. Kate went to a store, spent half of her money and ₱20 more; she went to a second store, spent half of her remaining money and ₱20 more. She then had exactly ₱15 left. How much money had she at first?

9. What fraction is midway between a. 1/4 and 4/5 b. 2 1/2 and 3 4/5?

10. If 8 is added to the numerator and denominator of 7/10, will the value of the resulting fraction increase or decrease? By how much?

11. A car left Town A at 6:00 A.M. at 60 km/h for Town B. At 7:00 A.M, a van left Town B at 70 km/h. If Town A is 280 km from Town B along a straight highway how far apart are the car and van at 8:30 A.M.?

12. Liza has 144 stamps. If 1/3 of her stamps are Philippine stamps, 6 more than 1/4 of them are Japanese stamps and the rest are stamps from different European countries, how many of each kind of stamp does Liza have?

13. Rod has ₱90.00. Jim has 1 1/3 as much money as Rod. How much money has Jim? How much do the two have together?

V. UNDERSTANDING RATIO, PROPORTION AND PERCENT BETTER

A. Express each of the following ratios in simplest form.

1. 20 min to 1 hour
2. 18 girls to 24 boys
3. 25 cm to 1 m
4. ₱125 for 5 meters
5. 25 cm to 4 dm
6. 15 years to 2 decades
7. 24 roses for 3 vases
8. 35 items correct to 50 items
9. 80 ¢ to ₱1.00
10. 130 sec to 1 ½ min

B. Find the missing term in each proportion.

1. n:15 = 4:5
2. 2:n = 8:20
3. n:9 = 52:63
4. 3:n = 8:24
5. 9/12 = n/18
6. 4:7 = 6:n
7. 5:c = 45:54
8. 3:8 = n:56
9. n:42 = 3:1.4
10. 7:3 = 4:n
11. n:3 = 12:8
12. 14:13 = 12:c
13. n:4 = 25:n
14. n:35 = 4:7
15. 1 ½:n = 3 ¼: 8

C. Analyze and solve.

1. The ratio of the earnings of the carpenter and his helper is 3:2. If the helper received ₱360 as his share, how much did the carpenter receive?

2. Dennis and Edward built a small table and sold it at a profit of ₱96. If Dennis contributed ₱48 and Edward ₱80, how much was each boy's share in the profit if each received proportional to his expense?

3. For every ₱21.70 that Edwin receives from his parents, he saves ₱9.30. How much does he save a month if his parents give him ₱108.50 a week?

4. A spring is stretched ½ cm for every 10 kilos of weight.
   a. How far will a weight of 24 kilos stretch it?
   b. How heavy a weight will stretch it by 2 ½ cm?

5. A 108-meter piece of nylon string was divided among three boys in the ratio 1:1.5:2 And the longest piece was 48m. How long were the other two pieces?

D. Make each equality hold true. Express each of the following as percent, decimal and fraction in lowest terms.

	PERCENT	FRACTION	DECIMAL
1.	_____	_____	4.09
2.	_____	6/10	_____
6.	_____	_____	1.5
7.	_____	9/45	_____

3. _____ = 13/10 = _____ 8. 37 1/5% = _____ = _____

4. _____ = _____ = 0.005 9. _____ = _____ = 1.45

5. _____ = 2 4/5 = _____ 10. 83.1/3% = _____ = _____

E. Determine what is unknown and solve for it. How many can you do orally?

1. n = 12% of 42
2. 18 is n% of 72
3. 120% of n = 54
4. n is 25% of 180
5. 10 is 6% of n
6. 135% of n = 216
7. 45 is 33 1/3% of n
8. 9 is n% of 90
9. 273 = n% of 780

F. Solve the following problems.

1. In a science test Mila got 40 out of 50 items. What percent of the test did she answer correctly?

2. There are 23 girls and 19 boys in a Grade V class. Eight students failed a test. What part of the class failed in the test? What percent failed? Passed?

3. Elizabeth is planning on saving 15% of her first monthly salary. If her first salary is ₱7500 a month, how much will she be able to save? How much is left for expenses?

4. Victoria saved ₱120 by buying a pair of shoes at a clearance sale. This saving was 8% of the marked price. What was the marked price?

5. During an annual sale, children's summer clothes marked at ₱85 are advertised to be at 40% off. How much is the discount? The sale price?

6. A sale advertisement of a bag is given as follows: regular price- ₱90; now only ₱63. What is the percent of discount?

7. A salesman receives a commission of 6% on all sales. How much worth of goods must he sell to receive an income of ₱8,500?

8. A dress marked ₱235 was bought at a discount of 12%. How much was the discount? How much was paid for it?

9. A refrigerator marked ₱14,500 was bought at a discount of 10%. There was a down payment of ₱2,500 and the rest was paid in 5 equal monthly installments. How much was the monthly installment?

10. A rectangular garden was 15 m by 12 m. If each dimension is increased by 20%, What are the new dimensions? By how much is the area increased?

Challenge!!!

1. Replace s with a number that will make the sentence true.
   16- s + 2 + 8 -3 + 6 – 5 = s + 10

2. Who am I? My tens digit is 3 times my hundredths digit. My ones digit is my hundredths digit plus 2. My tenths digit is the difference between my tens and ones digit. My hundredths digit is 3.

3. If 2*3 = 15, 3*4 = 28, 5*4 = 36, what is 7*4?

4. Said Sara to Glocar: If you give me one flower, we will each have the same number of flowers. Said Glocar to Sara: If you give me one flower, I will have twice as many as you have. How many has each?

5. How many counting numbers between 100 and 1, 000 remain the same when the order of the digits is reversed. 252, 353 are two of these.

6. What number should replace N? [N] - 5 -> [ ] x 3 -> [ ] - 6 -> [9]
[N] - 3 -> [ ] + 8 -> [ ] - 7 -> [16]

7. A table cloth 2.8 m long and 1.9 m wide when washed shrunk by 5%.
a. What was the original area of the table cloth?
b. By how many cm did the length and width shrink?
c. What was the area of the washed table cloth?
d. What percent of the area disappeared?

8. The factory price of the pair of men's shoes is P680. The marked price is 80% higher. How much is the marked price? If a year later what remained were sold at a discount of 35% of the marked price, did the merchant gain or lose? by how much?

VI. UNDERSTANDING MEASUREMENT BETTER

A. Fill in the blanks to make the equality true.

1. 1.1 meters = ____cm
2. 3, 410 mg = ____g
3. 521 mm = ____dm
4. ____dm^2 = 300 cm^2
5. ____mL = 10 L
6. 1680 min = ____hr
7. 9.124 km = ____m
8. 316 g = ____kg
9. 8.9 dm = ____cm
10. 706 yr = ____centuries
11. 930 da = ____mo ___da

B. Analyze and solve.

1. A machine has a capacity of 72 liters of milk. If the machine produces one bar of cheese for every 4.5 liters of milk, how many bars of cheese will it produce?

2. Find the perimeter of an equilateral triangle if one side is 20 cm.

3. The perimeter of an isosceles triangle ABC is 49 cm. If the length of base BC is 15 cm, what is AB, one of the equal sides?

4. A triangle has sides whose measurements are 15.5 cm, 15.07 and 20.15 cm. Find its perimeter.

5. If the length of a rectangle is increased by 5 units and width is increased by 2 units is the perimeter increased or decreased? By how many units? What happens to the area?

6. Maria wants to frame her cross-stitched pattern. If her frame will be 18 cm by 13 cm, how many cm of framing materials must she buy?

7. A square living room floor has a side of 7 meters. If each tile is 2 dm on each side, how many tiles are needed to cover the floor?

8. Daniel made a parallelogram whose area is 162 cm^2. If the base is 18 cm, what is the height?

9. How many different rectangles each having an area of 48 cm^2, can you draw? Which has the longest perimeter?

10. A stage décor requires a 112 cm diameter circle set with bulbs. How many bulbs will be needed if the bulbs will be set 3.2 cm apart?

11. The floor and walls of a bathroom with a length of 3.2 m, height of 2.7 m and width of 2.3 m are to be tiled with 1 dm tiles. Find the area to be tiled if the door is 2 m high and 1m wide and the window is 80 cm by 70 cm?

12. A paper mill requires shipping boxes. The boxes are to be rectangular prisms 4 dm by 2 1/2 dm. The cover fits over the box to a depth of 2 cm. What is the total surface area of the box?

13. The volume of a cube is 343 cm^3. What is the length of an edge?

14. How many pieces of jewelry boxes 10 cm by 6 cm by 4 cm can be packed into a box half a meter long, 4 dm wide and 3 dm high?

15. An aquarium is 0.8 m long, 0.4 m wide and 4.5 dm deep. How many liters of water does it contain when it is 4/5 of its depth full?

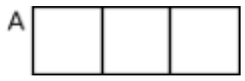
16. A circular cylindrical water tank is three-fourths full of water. The tank is 5 m high and 3 m in diameter. What is the weight of the water if a cubic meter of water weighs 1 metric ton?

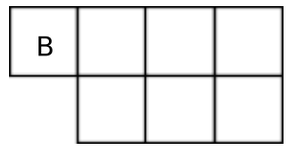
17. A sewing box is 24 cm long, 18 cm wide and 8 cm high. What is its volume? What area of cloth will be used to cover it all over?

18. A triangular pennant is 24 cm wide and has an height of 36 cm. What is its area?

19. A concrete flower box is 2 m long, 2.5dm wide and 5 dm high internal measurements. What volume of soil does it contain when it is full of soil to just 5 cm from the top edges?

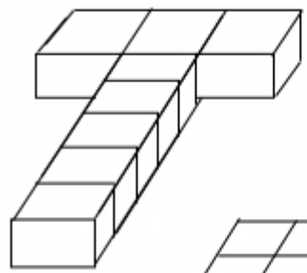
20. How many pieces of golden thread each 3.2 dm long can be cut from a spool of golden thread 15 m long?



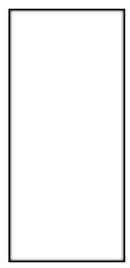


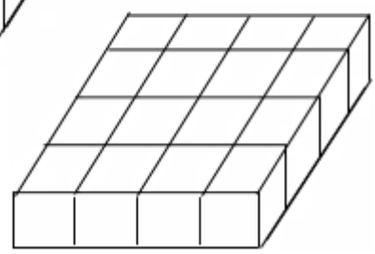
Challenge!!!

1. The small boxes in Figures A and B at the right are congruent squares. If the perimeter of Figure A is 48 inches, what is the perimeter of Figure B?



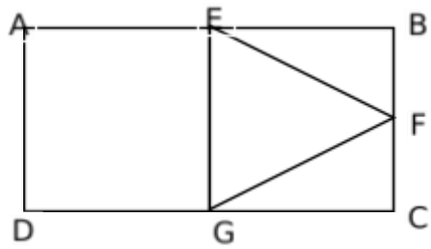
2. Eight one-inch cubes are put together to form the T-figure shown at the right. The complete outside of the T-figure is painted red and then separated into one-inch cubes. How many of the cubes have 3 red faces? 4 red faces? 5 red faces?





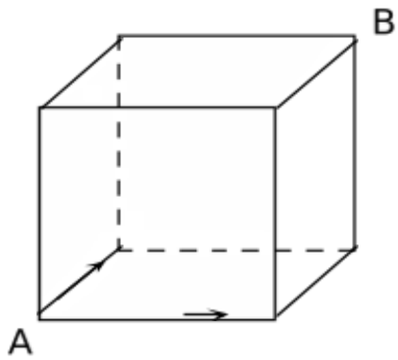
3. A wooden block is 4 inches long, 4 inches wide & 1 inch high. The block is painted red on all six sides and then cut into sixteen 1 inch cubes. How many of the cubes have 2 red faces? 3 red faces? 4 red faces? no red face?

4. A square piece of paper is folded in half as shown and then cut into 2 rectangles such that the perimeter of each of the rectangles is 18 inches. What is the perimeter of the original square?



5. ABCD is a rectangle. Points E, F and G are midpoints of the sides on which they are located. If the area of the rectangle is 36 square units, how many square units are there in the area of the triangle EFG?

6. The length of the shortest trip from A to B along the edges of the cube shown is the length of 3 edges. How many different 3-edge trips are there from A to B?



7. A tractor wheel is 88 inches in circumference. How many complete turns will the wheel make in

rolling one mile on the ground? (1 mile = 5280 feet)

8. A rectangular tile is 2 inches by 3 inches. What is the least number of tiles that are needed to completely cover a square region 2 feet on each side?

9. What happens to the volume of cube if the edge is doubled? haved? tripled?

B. 1. Twin primes are prime numbers that differ by 2. Two of the first twin primes are 3 and 5, 5 and 7.
   a. Find the first five twin primes greater than 50.
   b. How many twin primes greater than 50 but less than 200 are there?

2. The product of three whole numbers is 2730. The three whole numbers have no common factors. What are the numbers?

3. The sum of two numbers is 45. How many such pairs can you find? What is the largest product of any such pair?

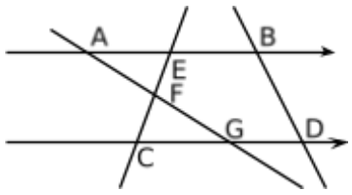
VII. UNDERSTANDING ABOUT GEOMETRY BETTER

A. 1. Tell how many endpoints each named figure has.

   a. a segment b. a line c. a plane d. a ray

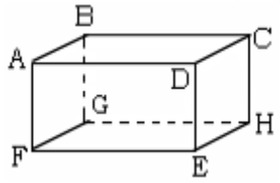
2. Refer to the diagram at the right in which AB and CD are parallel lines.

   a. Name three collinear points.
   b. Name two parallel lines.
   c. Name two parallel segments.
   d. Name two segments that are not parallel.
   e. Name two rays that are not parallel.



3. Refer to the box at the right. Classify each pair of planes as parallel or intersecting. If the planes are intersecting, name the line of intersection.

   a. planes ABCD and EFGH c. planes ABGF and EFGH
   b. planes ADEF and BCHG d. planes ABCD and EFGH
   e. In the box are GH and DC parallel, intersecting, or skew?



4. Classify each of the following as to whether they are acute, right, obtuse, straight, or reflex angles.

   a. 124^o b. 56^o c. 12.5^o d. 215^o e. 180.01^o f. 90^o

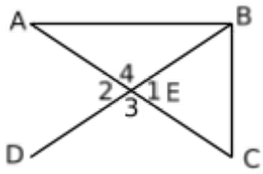
   g. 180^o h. 89.9^o i. $179\ 3/4^o$ j. 270^o k. 0.05^o l. 359.9^o

5. a. Name the angle formed by AB and AC in three different ways.

   b. Name the intersection of AC and BD.

   c. Name two angles that have common ray as a side of each of the angles.

   d. Name the rays that form the angle whose vertex is C.



6. Given that $\angle 1 = 10^o$, $\angle 2 = 54^o$, $\angle 3 = 80^o$, $\angle 4 = 100^o$, $\angle 5 = 36^o$ and $\angle 6 = 126^o$, fill in the blanks with the correct word or number. These angles are non-over-lapping angles.

   a. $\angle 1$ is complementary to _____ c. $\angle 2$ is complementary to _____

   b. $\angle 3$ is supplementary to _____ d. $\angle 2$ is supplementary to _____

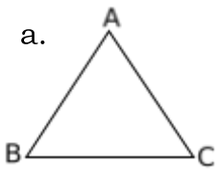
e. Since ∠2 + ∠3 + ∠4 + ∠6 = _____, a _____ is formed if the four angles are put together.

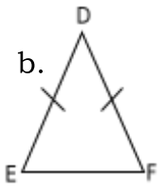
7. If M is the midpoint of AB and AB = 26 cm, then AM = _____.

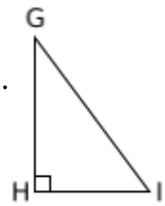
8. The complement of a 42^o angle is equal to _____.

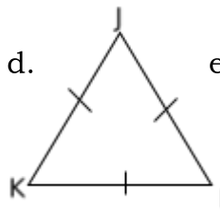
9. The supplement of a 107^o angle is equal to _____.

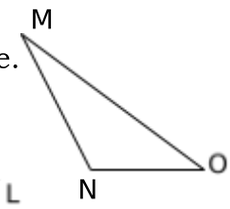
B. 1. Classify each of the triangles given below according to angles and according to its sides.

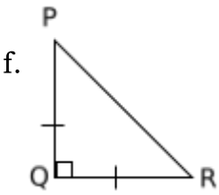
a. 

b. 

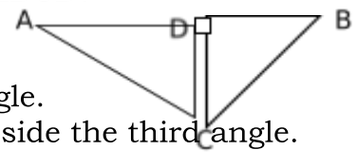
c. 

d. 

e. 

f. 

2. a. In the figure, what segment is a common side of ΔADC and ΔBCD?
b. What angle is common to ΔABC and ΔCAD?
c. What segment is a common side to ΔABC and ΔCAD?
d. Name two right triangles. e. Name an obtuse triangle.



Cut a triangle and then cut off two of the angles and put them beside the third angle. What is the sum of the three angles?

3. The measures of two angles of a triangle are given. Find the measure of the third angle.
a. 40^o, 60^o b. 15^o, 105^o c. 35^o, 55^o d. 160^o, 10^o

4. What is the measure of each angle of an equilateral triangle?

5. One of the equal angles of an isosceles triangle is 40^o. Find the vertex angle.

6. One acute angle of a right triangle is 75^o. What is the other acute angle?

7. What is the measure of each acute angle of an isosceles right triangle?

8. An isosceles triangle has a 90^o angle. Find its other angles.

9. One angle of a right triangle is 45^o. What can you say about it?

10. What is another name for a regular quadrilateral?

11. What is another name for a regular triangle?

12. The sum of the angles of a pentagon is 540^o. Find the measure of each angle of regular pentagon.

13. The sum of the angles of a hexagon is 720^o. Find the measure of each angle of a regular hexagon.

14. A STOP sign is a regular octagon 32 cm on a side. Find the perimeter in meters.

15. The perimeter of a regular pentagon is 60 m. How long is each side?

Challenge!!!

A. 1. The base of an isosceles triangle is 15 cm. Each leg is 3 cm shorter than the base. Find the perimeter of the triangle.

2. The perimeter of an isosceles triangle is 52 cm. If the base is 4 cm longer than a leg, find the base and legs of the triangle.

3. A base angle of an isosceles triangle is 9^{o} more than the vertex angle. Find the base and vertex angles.

4. The lengths of the sides of a triangle are consecutive odd numbers. If the perimeter is 69 cm, find the lengths of the sides of the triangle.

B. TRY HARDER!

1. Explore! By drawing different polygons, discover how many diagonals has a polygon of a. 5 sides b. 6 sides c. 7 sides d. 8 sides e. 50 sides

2. a. Draw any pentagon. Choose any point 0 inside and connect it to the vertices.
   b. How many triangles are formed?
   c. What is the sum of the angles of all the triangles?
   d. What is the sum of all the angles around 0?
   e. What is the sum of the angles of the pentagon?

3. Repeat a - e of #2 to find the sum of all the angles of a hexagon, heptagon and octagon.

4. What is the size of each angle of a regular a. pentagon? b. hexagon?
   c. heptagon? d. octagon?