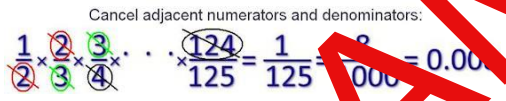
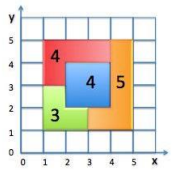
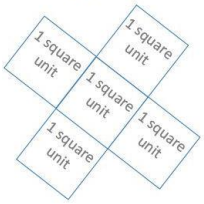
Mathematical Reasoning 1

Question No.	Explanation
1	In this addition series, 1 is added to the first number; 2 is added to the second number; 3 is added to the third number; 4 is added to the fourth number; and go on.
2	Let the three integers be x, x + 2 and x + 4. Then, 3x = 2(x + 4) + 3 x = 11. Third integer = x + 4 = 15.
3	Average of 20 numbers = 0. Sum of 20 numbers (0 x 20) = 0. It is quite possible that 19 of these numbers may be positive and if their sum is a then 20th number is (-a).
4	3*4*5=60
5	There are 8 x 36 = 288 stairs
6	C / B=0.75 / 0.5= 0.75X2= 1.5 (F)
7	5.4 - 0.002 = 5.398
8	Liquid: 1 or15/15 Frozen: 15/15 +1 I15 = 16/ 15 Liquid: (1 /15)/(16/15)=1/16
9	
10	1 / 5 jar = 24 candies. 1 jar = 5 x 24 = 120 candies. 1/2 jar = 120/2 = 60 candies.
11	The perimeter is the same as that of a 20 x 30 rectangle, which is 30 + 30 + 20 + 20 = 100.
12	The red and blue shapes have the same area of 4 square units. 
14	The square side is 1 unit. 4 x 3 = 12 
15	A: 10 square units; B : 11 square units; C: 10 square units; D: 10 square units.

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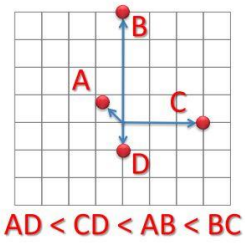
16	 AD < CD < AB < BC
17	Each train travels three times in 24 hours. 2413 = 8 trains
18	The dog ran 20 km because the speed was 20 km per 1 hour.
19.	Pipe 1 is as efficient as 2 of Pipe 2. Both Pipes 1 and 2 are efficient as 3 of Pipe 2. It takes 3 times less time for both pipes to empty the tank together than for Pipe 2. Two hours divided by 3 is equal to 2/3 hours = 2 x 60 minutes / 3 = 40 minutes.
20	60 drops every minute. 3600 drops every hour. 3600/3000 x 200 ml = 6/5 x 200 ml = 240 ml every hour. 240 x 24 = 5760 ml = about 6 liters.
21	123 - 12.5 + 45 - 125 = 123 + 45 -125 -12.5 = 168 -125 -12.5 = 4 -12 = 30.5
22	650 - 120 + 540 - 230 + 430 - 340 = 530 + 310 + 90 = $ 30
23	Each separate digit costs $10, "100" consists of ree igits. x $ 0 = $30
24	A + 2 = X (1) B + 3 = X (2) A + B < X (3) B > 0 (4) From (2) and (4), X > 3 (1) + (2) gives A + B = 2X - 5 < X using (3) X - 5 < 0 giving X < 5 but we know X > 3, meaning X = 4. A = 2, B = 1, X = 4.
25	Flash Harry's ba balance loo d like this. April – $100 May + $100 June – $200 July + $200 So Harry made $200 overall.
26	1st day = 198 2nd day =198 + 24 = 222 3rd day = 222 - 12 = 210 4th day = 210 + 29 = 239 4 day total = 198 + 222 + 210 + 239 = 869
27	(1 -0.95) x 5kg = 0.25kg (the slice weight without water). Let W = the new weight; then 0.25 / W = (1 - 0.75) W = 0.25 / 0.25 = 1kg
28	5 x 0.85 + 3 x 0.25 = 4.25 + 0.75 = 5kg. 5+3=8
29	10+8+8+8+8+8+8+8=10+56=66

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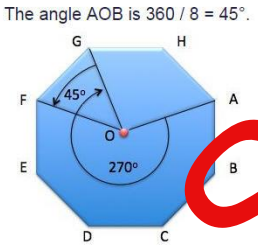
30	56/14=4 98/14=7 To solve this problem we first split each number down into its prime factors. There is only one possible way to write a number in terms of its prime factors (apart from the order in which they are written). 56=2x2x2x7 98=2x7x7 Now we notice that 2 and 7 are common prime factors, so 2 x 7 = 14 is the largest possible common factor.
31	Let the ten's digit be x and unit's digit be y. Then, (10x + y) - (10y + x) = 36 9(x - y) = 36 x - y = 4.
32	The pattern is x 2, x 3/2, x 2, x 3/2, x 2, ... So, missing term = 18 x 3/2 = 27.
33	The pattern is + 5, - 2, + 5, - 2,..... So, missing term = 36 - 2 = 34.
34	The correct answer is 5 because the numbers are a Fibonacci sequence. This means that each number is the sum of the two numbers to its left. So, 2 + 3 = 5
35	The correct answer is 85 because the numbers are going down by 27 each time. 27 is a the cube of the number 3: 3 x 3 x 3 = 27
36	
37	The triangle has two equal sides and is therefore isosceles. It therefore has two equal angles. We also use the rule that the sum of angles in any triangle is 180^o. $x+x+55^o=130^o$ $2x= 125^o$ $x=62.5^o$
38	

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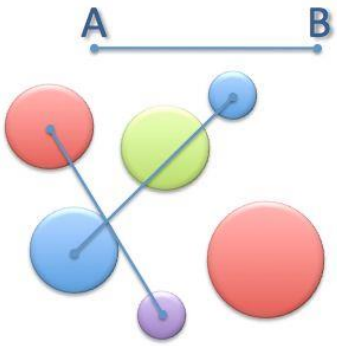
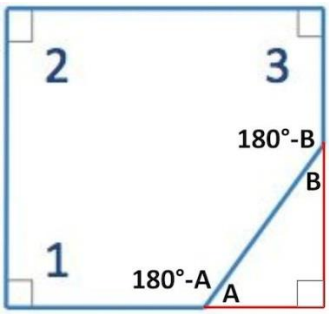
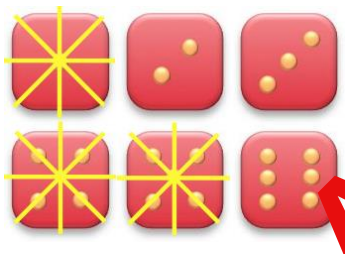
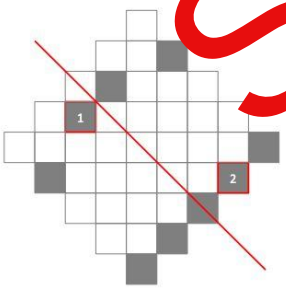
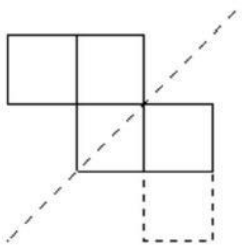
39	
40	 In the triangle, A+B+90°=180° A+B=90° Required angle is (180°-A)+(180°-B)= 360°-(A+B)= 360°-90° = 270°
41	
42	
43	

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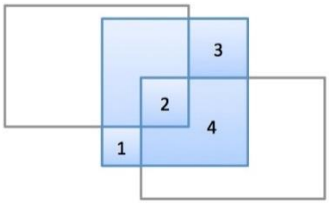
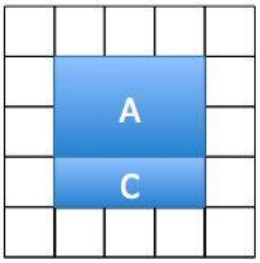
44	
45	The cube consists of 4 + 4 + 4 = 12 matches. The roof consists of 5 matches. The door consists of 3 matches. 12 + 5 + 3 = 20 matches.
46	
47	6 x 4 = 24
49	You can make six different numbers. In order, the numbers are: 799, [illegible], 898, 979, 988, 997.
50	By writing the sums as: 1 + 999, 2 + 998, 3 + 997 ... , [illegible] + 500. It is clear that the number of different pairs is five hundred.
51	Considering the number of 1's used in the sum. 6x1's: 1+1+1+1+1+1 5x1's: None 4x1's: 1+1+1+1+2 3x1's: 1+1+1+3 2x1's: 1+1+2+2 and 1+1+4 1x1: 1+2+3 and 1+5 0x1's: 2+2+2, 2+4 and 3+3 Giving 10 solutions.
52	Let us consider the first and second digit. Changing the first digit, ?9 10 numbers (i.e. 09, 19, 29, ... , 99). Changing the second digit, 9? 10 numbers (i.e. 90, 91, 92, ... , 99). Making a total of 20 number nines being written.
53	Gurmit paid $2, $4, $6, $1 and $8 for the five presents.
54	There are 3 Zids with 4 spots and 4 Zods with 9 spots.
56	Nasreen bought 4 angel fish and 8 goldfish.
59	(3/10)*? = 24 and 24/(3/10) = 80. Aunt Helen is 80 years old.
60	Write the ages as (A), (A + 2), (A + 4), (A + 6). 4A + 12 = 28 4A = 16 A=16/4=4

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	Youngest sister is (A) = 4. (4)+(6)+(8)+(10)=28

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