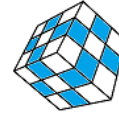## Working Backwards

Kinder & First Grade: solve <u>at least</u> 3 problems.
Second & Third Grade: solve <u>at least</u> 7 problems.
Fourth Grade and above: solve <u>at least</u> 12 problems.

Answer

1.	Amount she had yesterday + $5 = $11, therefore, she had $11 – $5 = **$6.**	*[$]6 or [$]6.00 or 6 dollars*
2.	She owned 9 – 3 – 2 = **4 pairs of earrings**.	*4 [pairs of earrings]*
3.	11 – 3 = **8 children**	*8 [children]*
4.	$6 + $9 + $2 +$3 = **$20**	*[$]20 or [$]20.00 or 20 dollars*
5.	151 – 50 – 41 – 25 = **35**	*35 [photographs]*
6.	__ - 8 + 13 = 28 Working backwards: 28 -13 + 8 = **23**	*23 [comic books]*
7.	The amount of money she spent on tickets is $20 - $2 = $18. Since each ticket cost $3, the number of tickets Samantha bought is 18÷3 = **6.**	*6 [tickets]*
8.	__+8-2+12-3+6 =25 Working backwards: 25-6+3-12+2-8=**4**	*4th floor*
9.	At the problem's end, Delilah ate 3 peanuts. Before that, she fed Matt 14 peanuts. That's 3 + 14, or 17 peanuts. Before that, Delilah fed Elle the elephant half of the peanuts. She had 17 peanuts after that, so she must have had twice as many peanuts before. That's 17 x 2 or **34 peanuts.**	*34 [peanuts]*
10.	It took her (15 + 25 + 20) minutes or 1 hour before she sat down to begin her homework. Therefore, her school ends at 1 hour before 4:15 p.m., which is **3:15 p.m.**	*3:15 p.m.*
11.	Half of the muffins went to the roofer. The other half is 18 (ballerina) + 9 (free Muffin Cafe) + 1 (himself) = 28 muffins. Thus, Myron made 28×2 = **56 muffins** this morning.	*56 [muffins]*
12.	1 day = 24 hours or 4 times 6 hours At first ▪ 6 hours ▪▪ 12 hrs. ▪▪▪▪ 18 hrs. ▪▪▪▪▪▪▪▪ 24 hrs. = 1 day ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ 16 blocks = 96 acorns, at the beginning of the day there were 96÷16 = **6 acorns**	*6 [acorns]*

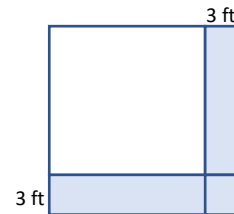| 13.	Work backwards: Before 28, it was 28 +3 or 31. Before increased by 9, it was 31-9 or 22. Before it was doubled, it was **11**.	*11*
14.	If there is only 1 smaller cube that has no paint on it, it means that original cube was 3 by 3. The only cubes that will have 2 faces painted are placed in the middle of each edge. There are 12 edges in a cube, thus, there are **12 cubes** that satisfy the given clues.	*12 [cubes]*
15.	Let's work backwards: Day 8: $2.50 Day 7: $5 Day 6: $10 Day 5: $20 Day 4: $40 Day 3: $80 Day 2: $160 Day 1: $320 Original price before sale: **$640**	*$640 [original price]*

16.	• We can look at multiples to see which numbers we can multiply together to make that answer. 49 is 7×7, so only 7 repeats twice, thus B = 6 • 15 and 27 have a common factor of 3, so 3 goes to the row and D = 9, E = 6×9 = 54 • A×C = 32. A or C = 4 and A or C =8. Thus A+C = 12. A + B + C + D + E = A + C + B + D + E = 12+6+9+54 = **81**	*81*

17.	Let's draw the square. The additional area is 159 ft^2. The area of the small corner piece is 3×3 = 9 ft^2. The area of the two rectangular pieces is 159 – 9 = 150 ft^2. Each rectangular piece is 150/2 = 75 ft^2. Since the shorter side of the rectangle is 3 ft, the longer side must be 75/3 = 25 ft. Thus, the side of the original square is 25 feet, and the area of the original square is 25 × 25 = **625 ft².**	*625 [ft²]*

18.	Start with the digits to use: 0, 1, 2, ~~3~~, 4, 5, 6, 7, 8, 9. Let's look at the 4-digit number. Consecutive numbers: 012, 123, 234, 345, 456, 567, … We can't use 012, 123, 234, 345 because either they use 3 or the sum of two of the consecutive numbers will repeat digit or 3. We can't use 567 and above, because the sum of any two digits in this sequence will become a two-digit number, not 1. So, the three consecutive numbers are 4, 5, 6, but we need to find the order. The third digit is 9, because it is the only possible sum 4+5 = 9, 5+6 or 4+6 will give 2-digit number. The digit 5 can't be placed as a unit digit because we will need another digit 5 for the product (5×3=15). The fourth digit can't be 6 either as then we would get digit 8 twice (4596×3=13788). So, we have last two options 6594 and 5694. 6594×3=19782, doesn't work because 1, 7, and 2 are not consecutive digits. So, we can try 5694 × 3 = **17082** and this is correct since we use the digits 0-9 once and all the clues work.	*17082*