RAM WORKSHOP 6th Grade   Name Solution   MATHLETE Challenge 4
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1. 25 × 25 = 5 × 5 × 25
$\underbrace{5 \times 5}_{25}$
D. 25

2. 420 minutes = 7 hrs; 7hrs before 4 P.M. is 9 A.M.
4 P.M. (AM/PM) = 16:00 (24-hr clock); 16:00 – 7 =9:00.
C. 9:00 A.M.

3. A pomegranate costs as much as 4 pawpaws.
As 1 pomegranate costs 50¢ more than 2 pawpaws,
4 pawpaws costs 50¢ more than 2 pawpaws.
Then 2 pawpaws cost 50¢.
So 4 pawpaws = one pomegranate cost $1.
C. $1

4. Add 15 to each choice, divide by 3, and add 3 jumps.
If the result is the same as the choice, then it's correct.
Since (12 + 15) ÷3 + 3 = 12, choice A is correct.
A. 12

5. The six consecutive integers are 25, 26, 27, 28, 29, and 30. The sum is (25+30) + (26+29) + (27+28) = 55 ×3 =165.
Since the sum of another 10 consecutive integers = 165, and 165÷10 = 16.5, the middle numbers are 16 and 17.
So Another 10 consecutive numbers are:
12, 13, 14, 15, 16, 17, 18, 19, 20, and 21.
C. 21

6. The product of 2 consecutive integers (one odd, and one even number) is even, so 195 and 221 are excluded.
182 = 13 × 14.
A. 182

7. The 3-digit area codes that can be made are 223, 232, 233, 322, 323, and 332. There are 6 in all.
B. 6

8. $2^{400} = 2^{4\times100} = (2^4)^{100} = 16^{100}$,
so it is the product of exactly 100 sixteens.
C. 100

9. The 2nd act of a 3-act play is 1/3 the length of the entire play, so the 1st and 3rd act sum up to 2/3. As the 1st act is twice as long as the 3rd,
1st act + 3rd act
= 3rd act + 3rd act + 3rd act = 2/3.
So 3rd act = $\frac{2}{3} \div 3 = \frac{2}{9}$
B. 2/9

10. The greatest of 10 consecutive positive integers is a prime number, so this greatest integer could be 11.
(10 is the smallest number that could be the greatest of 10 consecutive positive integers, but 10 is not a prime number.)
The sum of 2 + 3 + 4 + . . . + 10 + 11 is 65.
A. 65

11. (1234+0+1234+1+1234+2+1234+3+1234+4) ÷ 5
= (1234×5 + 10) ÷ 5
= (1234×5 + 2×5) ÷ 5
= 1234 + 2
C. 1234 + 2

12. The average of any two integers whose sum is 144 is 72. Any two integers equidistant from 72 add up to 144.
My favorite integer is 72.
D. 72

13. I added three of the numbers 11111, 22222, 33333, 44444, 55555, 66666, 77777, 88888, and 99999. My sum was one of these 9 numbers, so my sum could be
66666 =11111+22222+33333
77777 =11111+22222+44444
88888 =11111+22222+55555 or =11111+33333+44444
99999 =11111+22222+66666 or =11111+33333+55555
=22222+33333+44444
Possible remainders when dividing by 11 are 6, 7, 8, or 9.
A. 5

14. I wrote numbers 1 to 9 using 9 digits.
101-9=92, so there are 92 digits left on the first line.
92÷2=46, so there are 46 numbers left on the first line.
10 is the first number, (10+45) is the 46th number.
So, the last number on the first line is 55.
The last four digits on the first line are 5455, which sum to 19.
C. 19

15. The largest multiple of 8 less than 2018 is 2016. Subtract 8 49 times from 2016: 2016 - 8×49= 2016 – 392 = 1624.
2018 – 1624 = 396, so from 2018 to 1624 is 395 numbers counted.
B. 395