

## WMA Mathswell – Year 9 2019 – Multi-choice Questions

1. What is 111% of a number if 132 is 11% of the number?

- a) 1412      b) 1432      c) 1234      d) 1332      e) 1324

2. The drama club is selling tickets to a play for \$9 per ticket. The cost to rent the theatre and costumes is \$500. In addition, the printers are charging \$1.5 per ticket to print the tickets. How many tickets must the drama club sell to make a profit?

- a) 64      b) 65      c) 66      d) 67      e) 68

3. In a triangle, the sum of the two of the angles is equal to the third, and the length of the two longer sides are 17 and 15. What is the length of the shortest side?

- a) 8      b) 9      c) 10      d) 11      e) 12

4. The picture shows the first four notes of the tune “We Wish You A Merry Christmas”.



How many different melodies can be composed by these five notes?

- a) 6      b) 12      c) 16      d) 24      e) 48

5. Five numbers have a mean (average) of 12. If the first four numbers are 7, 11, 14 and 17, what is the last number?

- a) 7      b) 11      c) 12      d) 14      e) 17

6. If it is 7pm now. What time will it be in 2019 hours from now?

- a) 8pm      b) 9pm      c) 10pm      d) 11pm      e) 12am

7. Cross out 5 digits from the number 54321543215432154321 so that the remaining number is as small as possible. What are the first five digits of the result?

- a) 12125      b) 11432      c) 15432      d) 14321

8. If I use 30g of batter to make a pancake of 30cm in diameter, how much batter do I need for a diameter of 45 cm pancake with the same thickness?

- a) 56.7g      b) 67.5g      c) 60g      d) 45g      e) 87.5g

9. The odd integers from 5 to 21 are used to build a 3 by 3 magic square. (In a magic square, the numbers in each row, the numbers in each column, and the numbers on each diagonal have the same sum.) If 5, 9 and 17 are placed as shown, what is the value of  $x$ ?

	5	
9		17
$x$		

- a) 7            b) 11            c) 13            d) 15            e) 19

10. Four identical squares are cut from the corners of the rectangular sheet of cardboard shown. This sheet is then folded along the dotted lines and taped to make a box with an open top. The base of the box measures 5 cm by 4 cm. The volume of the box is 60 cubic meters. What was the area of the original sheet of cardboard?

- a)  $56\text{cm}^2$     b)  $110\text{cm}^2$     c)  $156\text{cm}^2$     d)  $180\text{cm}^2$     e)  $210\text{cm}^2$

11. What is the total number of dots that is visible?

- a) 18            b) 20            c) 24            d) 28            e) 34



12. A circle and a square are drawn on the plane so that they overlap. Together, the two shapes cover an area of 329 square units. The area common to both shapes is 101 square units. The area of the circle is 234 square units. What is the perimeter of the square in units?

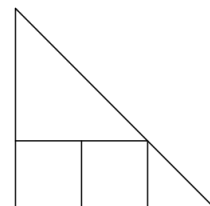
- a) 14            b) 48            c) 56            d) 64            e) 196

13. Sione plans to sell bananas for forty cents and apples for fifty cents at his fruit stand, but Tama accidentally reverses the prices. After selling all their fruit they earn a dollar more than they would have with the original prices. How many more bananas than apples did they sell?

- a) 2            b) 4            c) 5            d) 10            e) 20

14. Two congruent squares are packed into an isosceles right triangle as shown below. Each square has area 10. What is the area of the triangle?

- a) 40    b) 90    c) 82.5    d) 50    e) 45



15. The vertices of a triangle are (2, 1), (7, 1) and (4, 4).  
What is the area of the triangle?

- a) 5      b) 7.5      c) 10      d) 12.5      e) 15

16. In the addition shown, the letters X, Y and Z each represent a different non-zero digit. What is the digit X equal to?

$$\begin{array}{r} X X X \\ Y Y Y \\ + Z Z Z \\ \hline Z Y Y X \end{array}$$

- a) 1      b) 2      c) 7      d) 8      e) 9

17. Nathan has a collection of weights each weighing either 1, 2, 3 or 5 kilograms (and he has an infinite number of each weight). In how many ways can he measure out eight kilograms?

- a) 11      b) 12      c) 13      d) 14      e) 15

18. How much is  $0 - 1 + 10 - 100 + 1000 - \dots - 10^{10} + 10^{11}$  ?

- a) 10101010101      b) 9999999991      c) 9090909090  
d) 11111111111      e) 90909090909

19. Find the next number in the following sequence:

3, 5, 10, 19, 33, 53, ...

- a) 80      b) 93      c) 100      d) 103      e) 120

20. Ten-dollar hammers are on sale in the Cheat-Mart today.

**Buy two for the price of three and get 60% off the total!**

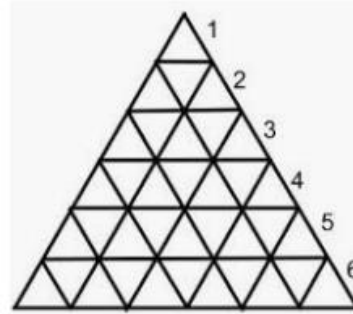
What is the final hammer price for me if I really only need one hammer?

- a) \$4      b) \$6      c) \$4.50      d) \$8      e) \$10

21. How many of the first 2018 positive integers have an odd number of positive factors?

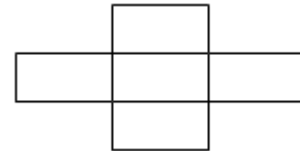
- a) 44      b) 31      c) 42      d) 83      e) 20

22. A large regular triangle is divided into 36 identical triangles. How many of the small triangles must be painted so that every small triangle touches one vertex of the painted triangle?



- a) 8      b) 7      c) 5      d) 6      e) 4

23. How many rectangles (of any size) are in this figure?



- a) 5      b) 7      c) 9      d) 10      e) 11

24. Jenna can mow a lawn in 2 hours. Her husband can mow the same lawn in 3 hours. If they work together (with two identical mowers), how long would it take to mow the same lawn?

- a) 60 mins      b) 72 mins      c) 75 mins      d) 90 mins      e) 150 mins

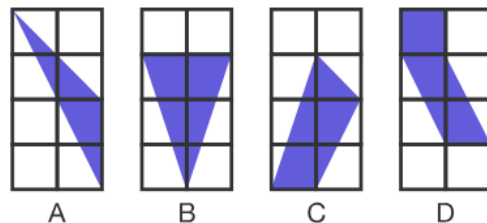
25. In a cuboid, if the longest diagonal doubles, how many times does the volume increase by?

- a) 2      b) 4      c) 6      d) 8      e) 10

26. Jill takes a rope that is 24 cm long and create a square. Dave takes the same rope and creates a rectangle that has an area 75% of the square. What is the length of the rectangle?

- a) 12cm      b) 9cm      c) 6cm      d) 7.5cm      e) 4.5cm

27. Which of the shaded area in the rectangle does not have the same area as the others?



- a) A      b) B      c) C      d) D      e) none

28.  $2 \times 10^5$  is represented by 2M5 on a Minion Calculator. The product of 2M3 and 3M2 would be represented as:

- a) 6M6      b) 6M5      c) 5M5      d) 2.3M3      e) 5M6

29. When Emma, Georgia and Caroline compared the amount of money they each had, they found that Emma and Georgia had \$100 together, Georgia and Caroline had \$160 together and Emma and Caroline had \$120 together. How much money did Emma have?

- a) \$30      b) \$40      c) \$60      d) \$70      e) \$90

30. Each of  $a$ ,  $b$ ,  $c$  and  $d$  is a positive integer and greater than 3. If

$$\frac{1}{a-2} = \frac{1}{b+2} = \frac{1}{c+1} = \frac{1}{d-3}$$

then which of the ordering of these four numbers is correct?

- a)  $a < b < c < d$       b)  $c < b < a < d$       c)  $b < a < c < d$   
d)  $d < a < c < b$       e)  $b < c < a < d$