Part A

1. Which number is the largest ?

   (A) 4^3 (B) 7×10 (C) $85 - 17$ (D) 23×3 (E) $(4 \times 2)^2$

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2. What is the value of : $\frac{2}{3} + \frac{3}{4}$?

   (A) $\frac{5}{4}$ (B) $\frac{4}{3}$ (C) $\frac{17}{12}$ (D) $\frac{3}{2}$ (E) $\frac{19}{12}$

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3. My parents won $ 1,200 in the lottery. They decide to share this amount as follows
   — one third will go to the bank to pay the mortgage.
   — one quarter will be spent buying toys.
   — two sixths will be used to repair the family car.
   What will remain of the amount won ?

   (A) $50 (B) $100 (C) $150 (D) $200 (E) $250

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4. Lina and Lana call each other. Their phones emit a beep as soon as the communication is estblished. Lina's phone issues this signal every 15 minutes and Lana's does every 12 minutes. After how many minutes of conversation will their phones beep together ?

   (A) 20 (B) 40 (C) 60 (D) 80 (E) 100

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5. The base of an aquarium measures 80 cm by 60 cm. If you pour 48,000 cm^3 of water into the aquarium, what will be the depth of the water ?

   (A) 4 cm (B) 5 cm (C) 6 cm (D) 10 cm (E) 14 cm

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6. A salesman receives a 10% commission on the first $1,000 of sales, and 15% for all sales above $1,000. If last week's sales totalled $5,000 then what was the salesman's total commission ?

   (A) $500 (B) $600 (C) $700 (D) $800 (E) $900

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7. A filled barrel weighs 35 kg. If you half empty it, the scale shows 19 kg. How much does the empty barrel weigh ?

(A) 1 kg (B) 2 kg (C) 3 kg (D) 4 kg (E) 5 kg

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8. Jules and Ginette each have a bag of marbles. Jules's bag contains twice as many as Ginette's bag. If six marbles were removed from each bag, Jules's bag would then contain three times as many as Ginette's. How many marbles does Jules's bag contain at the start ?

(A) 12 (B) 18 (C) 24 (D) 30 (E) 36

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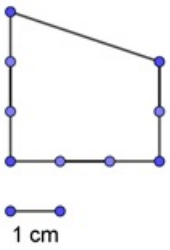
9. What is the perimeter, in centimeters, of the quadrilateral shown below ?



(A) $7+\sqrt{10}$ (B) $8+\sqrt{5}$ (C) 11 (D) $8+\sqrt{10}$ (E) 12

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10. Three numbers are said to be related if the product of the first two is equal to the sum of the last two. For example the three numbers of the triple (3, 4, 8) are related because $3\times4=4+8$. Which of the following triples does not contain three related numbers ?

(A) (2, 3, 3) (B) (2, 5, 5) (C) (3, 3, 6) (D) (4, 5, 15) (E) (4, 6, 20)

Part B

11. Find the number of integers n such that $10 < \dfrac{3 \times 2^n}{5} < 1000$.

(A) 3 (B) 4 (C) 5 (D) 6 (E) 7

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12. Some boys and girls go to pick apples. The boys pick as many apples per bag as they have bags ; and the girls also pick as many apples per bag as they have bags, but three apples per bag less than the boys. At home, the apples are placed in a large basket and the total number of apples is 117. How many bags did the boys have ?

(A) 5 (B) 9 (C) 13 (D) 15 (E) 17

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13. Two planes depart at 9 am from cities A and B located 4,500 km apart. The first plane goes from A to B. Its speed is 1,100 km/h. The second plane goes from B to A. Its speed is 900 km/h. At what time do they meet ?

(A) 11 am (B) 11:15 am (C) 11:30 am (D) 11:45 am (E) noon

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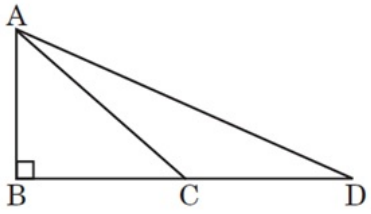
14. If $AB = 12$, $AC = 13$ and $AD = 15$, what is the area of the triangle $\triangle ACD$?



(A) 24 (B) 34 (C) 44 (D) 54 (E) 64

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15. The exams were too difficult at the Pickers School this year. Only one student passed both the math test and the science test. If 57 students failed the math test and 44 failed the science test and there are 100 students at this school, how many students failed both the math test and the science test ?

(A) 0 (B) 1 (C) 2 (D) 3 (E) 5

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16. Jean makes a round trip by car. If he maintains an average speed of 30 km/h on the outward trip and 60 km/h on the return trip, what is his average speed in km/h, on the whole trip ?

(A) 35 (B) 40 (C) 45 (D) 50 (E) 55

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17. Claude owns 55 movies in DVD format. He has suspense movies, action movies and romance movies. He has 5 more suspense movies than action movies and 3 times fewer action movies than romance movies. How many action movies does he have ?

(A) 10 (B) 15 (C) 20 (D) 25 (E) 30

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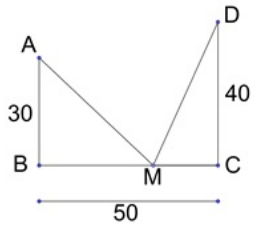
18. Points B, M and C are on the same straight line. If the two triangles $\triangle MBA$ and $\triangle MCD$ are right angled and the two hypotenuses AM and DM have the same length, then the length of the segment BM is :



(A) 18 (B) 22 (C) 32 (D) 36 (E) 40

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19. You roll two six-sided dice. How many different ways can you get a sum equal to 8 ?

(A) 4 (B) 5 (C) 6 (D) 7 (E) 8

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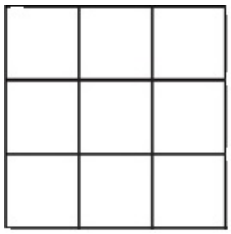
20. The fuel consumption rate represents the number of liters of gasoline needed to travel 100 km. If a gallon equals 4.5 liters and a mile equals 1.6 kilometers, what is the rate of fuel consumption (in liters per 100 km to the nearest integer) of a car traveling 20 miles per gallon ?

(A) 12 (B) 14 (C) 16 (D) 18 (E) 24

Part C

21. How many rectangles (including squares) are in the following figure?



(A) 16 (B) 26 (C) 36 (D) 46 (E) 56

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22. How many numbers from 1 to 201 are multiples of six or seven but not both?

(A) 51 (B) 53 (C) 55 (D) 57 (E) 61

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23. Ed writes all the numbers from 1 to 100 one after the other (12345 ... 9899100). How many even digits has he written? (0, 2, 4, 6 and 8 are the even digits)

(A) 88 (B) 90 (C) 91 (D) 92 (E) 96

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24. You have a cube with 3 m sides. You take out a cube with 1 m sides from the center of one of faces. Then you take out the cube with 1 m sides from the center of your original cube. What is the surface area of your final solid?

(A) 58 m^2 (B) 59 m^2 (C) 60 m^2 (D) 61 m^2 (E) 62 m^2

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25. Two dimes with a nickel or five nickels give you two distinct ways of having a sum of 25 cents. In how many distinct ways can you have a sum of 50 cents using nickels, dimes and quarters?

(A) 5 (B) 7 (C) 9 (D) 10 (E) 11

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26. A tank is filled by two faucets. Using the first faucet, it fills up in 4 hours. Using the second faucet, it fills up in 6 hours. You open the two faucets at the same time. If the tank is already half filled, how long, in minutes, will it take to fill?

(A) 72 (B) 75 (C) 90 (D) 120 (E) 144