COMPETIFY HUB

FUELING AMBITION, FORGING PATHS

MATH LEVEL 2

GRADES 5-8

PROVIDING FREE RESOURCES FOR ALL

Demo Set 2

Q11: An article is listed at $1000 and to successive discounts of 5% and 5% are given. How much would the seller gain or lose if he gives a single discount of 10%

Q12: The digits of each of the following five numbers are written in reverse order and five new numbers are obtained.

563 826 487 265 849

What will be the second digit of the fourth-highest new number?

S11: Successive discount = X+Y - (XY)/100
Where X is first discount and Y is second discount.

Successive discount = 5+5 - (5*5)/100
= 10-¼ = 9 ¾ %
Selling price with successive discounts = $1000 - 9 ¾ % of $1000 = $1000 - $97.5 = $902.5
Single discount = 10/100*$1000 = $100
Selling price with single discount = $1000 - $100 = $900
Hence, the seller will loose money if he gives single discount
Loss = $902.5 - $900 = $2.5

S12: The new numbers will be 365 628 784 562 648

The fourth highest number is 562 and the second digit of 562 is 6.

Q13: A kid has 100 candies. 2/5th of the candies are green and 3/5th of the candies are white. 1/8th of the green candies is filled with chocolate. Find the number of green candies without filling.

Q14: The perimeter of a triangular field is 12a^2-4a+5 and two of its sides are a^2-a+8 and 3a^2-5a+3. Find the third side of the field.

S13: Number of green candies = 2/5 * 100 = 40

The number of candies with filling = 1/8 * 40 = 5 candies

Number of green candies without filling= 40-5 = 35 candies

S14: The third side is perimeter - (first side + second side)

=12a^2-4a+5-(a^2-a+8+3a^2-5a+3)

=12a^2-4a+5-(4a^2-6a+11)

=12a^2-4a+5-4a^2+6a-11

=8a^2+2a-6

Q15: If x+60% of 1460 = 35% of 720 + 150% of 520. Find x.

Q16: In a certain code MATHS is written as 46578 and SCIENCE is written as 8029109. What is the code for MATCH?

S15: x+60% of 1460 = 35% of 720 + 150% of 520

X + 876 = 252 + 780

X + 876 = 1032

X = 1032 - 876

X = 156

S16:

M=4

A=6

T=5

H=7

S=8

C=0

I=2

E=9

N=1

So, the code for MATCH is 46507

Q17. Find the number of diagonals in a nonagon.

Q18: Three machines X, Y and Z can produce a product. Machine X takes 6 hours to make 100 units. Machine Y is thrice as fast as X. Machine Z takes the same amount of time to produce 100 units as X and Y running together. How much time will be required to produce 100 units if all the machines are run simultaneously?

S17: No. of sides in a nonagon = 9

No. of diagonals in a n-sided polygon = n(n-3)/2
= 9*(9 - 3)/2
=9 * 6/2
=27

S18:Y is thrice as fast as X so it will take 1/3rd of 6 hours to produce 100 units

⅓ * 6 hours = 2 hours

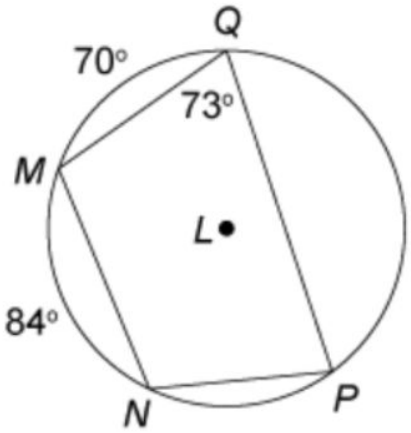
Work done by Z = ½ + ⅙ = 4/6

Work done by all the machines together = ½ + ⅙ + 4/6

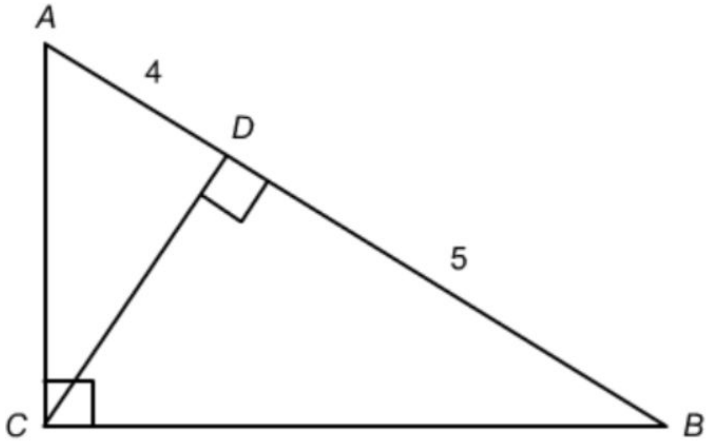
= 8/6

Time taken by all machines together to produce 100 units = 6/8 * 60min = 45 minutes

Q19:Quadrilateral MNPQ is inscribed inside Circle L. If angle MQP is 73 degrees, how many degrees is angle MNP?



Q20: Similar right triangles ACB, ADC and CDB are all shown below. If the measure of AD is 4 and the measure of DB is 5, find the measure of AC.



S19:There are multiple solutions to this problem. However, the easiest one is to realize that opposite angles in an inscribed quadrilateral still add up to 180 degrees. Therefore the equation 180 - 73 = 107 gives us the answer that angle MNP is 107 degrees.

S20:We know that similar triangles have corresponding side lengths. This means we can set up a ratio to find the missing side. If we look closely, we can see that AC is the hypotenuse for the smallest triangle (ACD) but is also the shorter leg for the biggest triangle (ACB). We can use this to set up a ratio of shorter leg / hypotenuse. Written out, the ratio looks like this 4x=x9. To solve the ratio, we cross multiply which gives us x2 = 36. Square root it, and we find x = 6, which is also our answer for AC.