3/ Sum of the first n conse pos even int: S = n(n + 1)

12/ decreased by 5.8% = x \* 94.2%

25/ x/4 is 2 more than x/8 🡪 x/4 = 2 + x/8

32/ A, b pos ints, remainder when a/b = remainder when b/a 🡪 only 36 = 6\*6 (a = b)

33/ List of pos int are multiples of 9 & < 100. Median = ? 1 to 11 🡪 “6” \* 9 = 54

40/ 1 – 0.000001 = 0.999999

C. 1.001 \* 0.999 = (1 + **0.001) \* 0.999** = 0.999 + 0.**000999**

58/ ***How many ints between 1 and 16, incl, have exactly 3 diff pos int factors?***

***2 🡪 Only 4 (1;2;4) & 9 (1;3;9)***

61/ p: product of ints from 100-299 & q: product of ints from 200-299 🡪 p/q = 199!/99!

65/ Round down: 4,024 ft / 5,280 ft ~ 4/5 mile

20 mph ~ 1 mile / 3’ 🡪 4/5 \* 3 ~ 2.4’ 🡪 Choose 2’

66/ S = {0,4,5,2,11,8}. How much greater median > mean?

Median = (4+5)/2 = 4.5 🡪 **Diff = 5 – 4.5** = 0.5

67/ Last to this year: annual interest rate: 10%. If rate this year 11%, rate LY = ?

Given 1.1L = 11% 🡪 L = 10% (L annual interest rate LY)

68/ (\*\*) x/6 \* 100% = (5 - x)/2 \* 100%

69/ (\*) S odd: s, s+2, s+4, …., s+18. T even: t, t+2, … t+8. S= t + 7 🡪 s – t = 7

Avg S: (10s + 90)/10 = s + 9; Avg T: (5t + 20)/5 = t + 4

* (s + 9) – (t – 4) = (s – t) + (9 – 4) = 7 + 5 = 12

70/ ***Area of triangle: Nhớ nhân ½***

72/ 2/3 [3/4 ( 2/3 N)] = 120 🡪 N = 600

74/ 39,897\*0.0096/198.76 🡪 ***Round up***: 40,000\*0.01/200 = 2

75/ Square has area n, length of diagonal = ? = căn (2n)

77/ (\*\*) 40 new, 60 old machines.

Original rate = 1 toy / 3’ = 20 toys . 60’ = 20 toys / 1h = 20

New rate for 40 new machines: 1 toys / 2’ = 30 toys / 60’ = 30

Original num of toys by 100 old machines: 20\*100 = 2000 toys

Num of toys by 60 old machines: 60\*20 = 1200 toys

Num of toys by 40 old machines: 40\*30 = 1200 toys 🡪 Total: 2400 toys

Change/Original \* 100 = (2400-2000)/2000 \* 100 = 20%

79/ 15th highest: 14; itself: 1; 20th lowest: 19 🡪 Total: 34

81/ (\*) Tính ¼ a rồi ghép vào

82/ (\*\*) 1 + 2(-1) + 3x = 3x – 1 or (-1) + 2\*1 + 3x = 3x – 1 🡪 Thế vào bảng

85/ Sum of reciprocals of 2 conse odd ints = 12/35 🡪 Greater?

* 35 = a\*b 🡪 Larger a = 7

86/ (\*) Sum of odd ints from 35 to 85, inclu = Num of odd ints \* Avg

= [(85 – 35)/2 + 1] \* [(85 + 35)/2] = 1,560

88/ (\*\*) Dealing with consecutive integers! 🡪 Median = Average

1st 2 ros = 20 + 21 = 41

Next ***15*** rows 🡪 Median is 37: {23, 25, 27, 29, 31, 33, 35, ***37***, 39, 41, 43, 45, 47, 49, 51}

Total: 1st rows + Num of next 15 rows + Median of 15 rows = 41 + 15\*37 = 596

92/ (\*) 24 / pos int n, remainder = 4. True? 24 = qn + 4 🡪 n > 4 & ***qn = 20***

* n = 5 or 10 or 20

🡪 n multiple of 5 & ***n a factor of 20***

93/ Thousandths digits of 53/5,000? 🡪 Làm tròn mẫu: = 106/10,000 = 0,01*0*6 🡪 0

95/ (\*) Product of 3,305 & 1 digit int x is 5 digit int 🡪 A {5,7,9} & B {1,5,7}

96/ Largest int n such ***1/2n > 0.01 ? 🡪 Đảo lên 🡪 2n < 100*** 🡪 n = 6

101/ (\*\*) ***Open box (5 sides only)***

103/ (\*\*) ***If x = -|w|,*** which True? ***🡪 x2 = w2***

104/ ***Lines not contain any point with integerss as both coordinates? 🡪 y = x + ½***

*If x int, y iny 🡪 y – x must int but y – x = ½*

109/ (\*\*\*) m even int, v odd int, m > v > 0. Which even int num < m & > v?

***Chọn ví dụ (ko cần test nhiều vd) 🡪 (m – v – 1) / 2***

116/ Line k passes through the origin & has slope 2 🡪 y = 2x

117/ If a, b, c are constants, a > b > c and x3 – x = (x – a)(x – b)(x – c) for all numbers x, what is the value of b? 🡪 b = 0 bcuz x3 – x = x(x2 – 1) = x(x + 1)(x – 1)

119/ (\*) ***150% greater than LY’s earnings = 1.5 \* Earnings***

120/ ***Vavg = Stotal / Ttotal = 100 / (x + y)*** (1st half of 100 miles in x hrs & 2nd half in y hrs)

123/ [0.437 + 0.43\*(1.35 – 1.25)] / 1.35 = **48/135 ~ 6/17 !! 6/18 = 1/3 = 33% 🡪 Choose 35%**

126/ (\*\*\*) **2s2 = 5,000** 🡪 s = 50. Garden = Total – Remaning = 75,000 – 25,000 = 50,000 🡪 Choose 45,000

127/ 1mm = 0.1cm 🡪 **1mm3 = 0.001cm3**

128/ Quy đồng bỏ mẫu 1/3

129/ x0 = 0, 3, 6, 9, 12

xk = 15, 12, 9, 6, 3, xA = 0 🡪 11 temrs from x0 to xK 🡪 n = 10

130/ x2 + 12x – 540 = 0 🡪 (x – 18)(x + 30) = 0. 18\*12 = 216

133/ (\*) ***2 nums differ by 2 & sum to S. Which greater?*** x vs x-2 🡪 ***S/2 + 1***

134/ (\*\*\*) Shaded area = 64 căn 3 – 32pi. Radius r = ?

Area of big triangle = ½ \* 2r \* r căn 3 = r2 căn 3 (#)

Area of each sector = 60/360 = 1/6 area of each circle

🡪 Sum of areas of 3 sectors = 3 \* 1/6 pi r2 = ½ pi r2 (##)

Shaded area = (#) – (##) = r2(căn 3 - 1/2 pi)

But given 64\* căn 3 – 32pi = 64(căn 3 – ½ pi) 🡪 r2 = 64 🡪 r = 8

139/ (\*) ***Regular hexagon (lục giác đều) 🡪 6 equilateral traingles (6 tam giác cân)***

* ***Diagonal thru center of regular hexagon = 2 \* a side of it*** = 2 \* cạnh (80) = 160

140/ (\*\*) Total degrees of these 4 traingles’ interior angles = Sum of degrees of 6 interior angles 🡪 4\* 180 / 6 = 120

Smaller traingle: 30-60-90 🡪 Sides 1 : căn 3 : 2 🡪 PV (cạnh vuông dài) = x căn 3 / 2 🡪 PR = x căn 3 (cạnh của tam giác trong)

* Perimeter of PRT = 3x căn 3

141/ (\*\*) 45% had A. 3% had both A & B. Prop with A who also had B?

* 3 / 45 = 1/15 = 1/3 \* 1/5 = 1/3 \* 20%

142/ (\*) Total pax = 100 🡪 20 pax w tickets & cars

60% w ticket, w/o cars 🡪 40% w tickets & cars

x = num of pax w tickets & cars 🡪 0.4x = 20 🡪 x = 50

144/ (\*\*) ***Sum of reciprocals of 10 conse ints from 21-30 🡪 S between 1/3 & ½***

145/ (\*\*) Greatest prime factor of f(24) 🡪 2 \* (11) = 22 🡪 11

146/ (\*\*\*) ***The length of any side of a pentagon must be < sum of the other 4 sides***

4 sides sum = 14 🡪 Remove 15

149/ (\*\*\*\*) 2 pyramids, each with a shared square base. Sum of num of edges & faces? = 20

151/ ***Chiều dài vòng cung / Chu vi hình tròn = Góc vòng cung / 360***

* (4pi/3) / 8pi = x/360 🡪 x = 60 🡪 Equilateral has RU = 4

152/ (\*\*) ***7C1 \* 10C2*** = 7\*45 = 315

153/ (\*\*) ***Đặt ptrinh bậc 1*** 🡪 35(S + F) = 30S + 55F 🡪 S = 4F 🡪 F/S= ¼

* F / (S + F) = 1 / (1 + 4) = 1/5 = 0.2

154/ ***Nhớ đếm {w, x, y, z}***

155/ (\*\*) Diff ways of 3 identical red card ***5C3*** = 10.

Total having 2 spaces for yellow & blue = **10** ***\* 2 \* 1*** = 20

156/ (\*\*) Có căn 1 vế thì bình phương 2 vế, phân vị trí theo đề.

* 2xy căn 3 = -36 căn 3 🡪 xy = -18

157/ (\*\*\*) 10 books: 4 pp, 6 hard. Ways 5 books at least 1 hard?

* ***Total – Ways of all 5 books are hard = 10C5 – 6C5*** = 246

159/ (\*) 2A3B5C = 9(2a3b5c) = 32(2a3b5c) = ***2a3b+25c*** 🡪 A= a, B = b + 2, C = c

* ***m – v = (100A + 10B + C) – (100a + 10b + c)*** = 20

160/ 1050 – 74 🡪 Sum of digits = 9\*48 + 2 + 6 = 440

161/ 0.89c + 1.07t = 1.01(c + t) 🡪 c/t = ½

164/ (\*\*\*) Area right triangle = ½ xy, where ***x < y < z 🡪 x & y are legs***

Phép thử ví dụ: x = 1 🡪 y = 2 or x = ½ 🡪 y = 4. It can’t be x = 2 or 3/2

165/ (\*) **Total cost: np = 30**

(4/5 n)(1.5p) + (1/5n)\*0.8\*(***1.5p***) = 36/25 np

* Profit = 36/25 np – np = 11/25 np = 11/25 \* 300 = 132$

167/ (\*\*\*) 4 childrens: Prob 2 boys 2 girls?

C1: Liệt bảng đếm Boys 4-3-1-0 & Girls 0-1-3-4 / total 24 = 16

C2: P (favorable outcomes) = 4C2 \* (1/2)2 \* (1 – ½)4-2 = 3/8

168/ (\*\*\*) x could increase by no more than 50% to become 10;

Or x could decrease by no more than 50% to become 10.

If increase, 1.5x = 10 🡪 x = 6.67

If decrease, 0.5x =10 🡪 x = 20

* Closing price on 1st day 6.67 or 20

LD 50% more than 1st day 🡪 < 1.5 \* 20 🡪 < 30

LD 50% less than 1st day 🡪 > 0.5 \* 6.67 🡪 > 3.3

169/ (\*\*\*) (i) CAB = 180 – 2y; (ii) z + x + (180 – 2y) = 90 🡪 2y – x – z = 90

(III) z + 90 + y = 180 🡪 z = 90 – y; (iv) ***x = 2z***; (v) ***y = 2x***

* ***Multiply (iii) by 2***: 2z = 180 – 2y –(iv)🡪 x = 180 – 2y 🡪 x + 2y = 180
* (v): x + 4x = 180 🡪 x = 36

171/ (\*) n2/72 = n\*n / 23\*32

If one more 2, n\*n will divisible to 24\*32 🡪 Largest n: 2\*2\*3 = 12

173/ (\*\*\*) x factor of y, x multiple of z. All 3 pos ints. 🡪 ***Ví dụ: 2; 4; 8***

174/ (\*\*\*) ***x > 2 days*** = ? for ***2 w widgets***

w/x + w/(x – 2) = 1/3 \* 5/4 w = 5/12 w 🡪 5x2 – 34x + 24 = (5x – 4)(x – 6)

Since x > 2 🡪 x = 6, means X takes 6 days for 1 w 🡪 ***2 \**** 6 = 12 days for ***2 w*** widgets

175/ (\*) Vẽ hình. x2/(y2 - x2) = 25/39 🡪 x2/y2 = 25/64 🡪 x = 5/8 y

* Width of woodden strip: (y-x)/2 = (y – 5/8 y) / 2 = 3/16 y with any value of y 🡪 E. All