14.09.2020 FN SESSION

1. In a right angle triangle ABC, ∠ A is right angle DE is parallel to the hypotenuse BC and the length of DE is 65% the length of BC, what is the area of ΔADE, if the area of ABC is 68 cm2?

**a) 27.83 cm2 b) 41.6 cm2 c) 28.73 cm2 d) none of these**

C

A

1 2

E 3 4

5 6

90 7 8

A D B C

3 & 7 WILL BE EQUAL, 4 & 8 WILL BE EQUAL

ADE & ABC Similar triangles

A-A-A 1 & 5 EQUAL ,2 & 6 EQUAL

TRIANGLE **ABC** IS RIGHT TRIANGLE AND ANGLE A = 90 DEGREES

TRIANGLE **ADE** IS RIGHT TRIANGLE AND ANGLE A = 90 DEGREES

BC WHICH IS THE HYPOTENUSE OF LARGE TRIANGLE IS PARALLEL TO DE WHICH IS HYPOTENUSE OF SMALL TRIANGLE

LENGTH OF DE = 65 % OF BC

TRIANGLE ABC 🡪 LARGER TRIANGLE 🡪 68 cm2 (Area)

TRIANGLE ADE 🡪 SMALLER TRIANGLE 🡪 ? (Area)

**SIMILAR TRIANGLES**

1. WHEN 2 OF THE 3 CORRESPONDING ANGLES ARE THE SAME WE CALL THOSE TRIANGLES SIMILAR TRIAGLES.

ANGLE A OF ABC = ANGLE A ADE

ANGLE C OF ABC = ANGLE E OF ADE

ANGLE B OF ABC = ANGLE D OF ADE

TRIANGLE ABC & TRIANGLE ADE are similar triangles

AREA OF ABC = (BC/ DE )2 = (AB / AD )2 = (AC / AE )2

AREA OF ADE

AREA OF ABC = BC2

AREA OF ADE (.65 BC)2

AREA OF ABC = ( BC / .65 BC )2

AREA OF ADE

68 / AREA ADE = 1 / .4225

68 \* .4225 = AREA ADE

28.73 cm2 = AREA ADE

2. In a factory there are two identical solid blocks of iron. When the first block is melted and recast into spheres of equal radii ‘r’, then 14cc of iron was left, but when the second block was melted and recast into sphere each of radii ‘2r’, then 36 cc of iron was left. The volumes of the solid blocks and all the spheres are in integers. What is the volume (in cm3) of each of the larger spheres of radius ‘2r’?

**a) 176 cm3 b) 12 π cm3 c) 192 cm3 d) data insufficient**

4 V1 + 14 = V

remainder will be 14cc remainder will be 36 cc

**Spheres**

r r 2r

154 = 4 V1 + 14

**Larger sphere’s volume ?**

Volume of a sphere = (4 / 3) Pi r3

Volume of solid block = V; Volume of smaller sphere =V1; Volume of larger Sphere = V2

Volume of Sphere V1 = (4 / 3) Pi r3

Volume of Sphere V2 = (4 / 3) Pi (2r)3 =(4 / 3) Pi (8r3)

V1 / V2 = 1 / 8

V2 = 8 V1

k = no of spheres with radius r.

l = no of spheres with radius 2r.

154 = 4 \* V1 + 14

V = k V1 + 14

V = l V2 + 36

k V1 + 14 = l V2 + 36

k V1 + 14 = l 8V1 + 36

V1 k -V1 8l = 22

V1 ( k – 8l) = 22.

V1 = 22 / ( k – 8l)

V1 is an integer. 1 2 3 4 5 6 5 55 6662

V1 = 22 / ( k – 8l) = 22 / 1 or 22 / 2 or 22 /11 or 22/22

(k-8l) = 1, value of V1 = 22

(k-8l) = 2, value of V1 = 11

(k-8l) =11, value of V1 = 2

(k-8l) =22, value of V1 = 1

V1 = **22 11 2 1**

V = k V1 + 14

Dividend = Quotient \* Divisor + Remainder

2 🡪 Quotient

43 100 🡪 Dividend

86

14 🡪 Reminder

Dividend = Quotient \* Divisor + Remainder

100 / 43 = 2 🡪 R [14]

Divisor is 43 range of the remainder 0-42

Divisor > Remainder (always)

Divsor is 43 ,reminders range will be 0 - 42

100 is volume of solid block

2 no of spheres

43 is volume of 1 out of 2 spheres

Dividend= Divisor \* Quotient + Remainder

V= Dividend;

K = quotient

V1 = Divisor

14 = Remainder

V1 = 22 cm3

V2 = 8 V1

= 8 \* 22 = 176 cm 3

V = k V1 + 14

Volume of the solid block = No of small spheres \* Volume of 1 small sphere + 14

Dividend = Quotient \* Divisor + Remainder

V1 = 22 / ( k – 8l)

V1 = 22 / 1= 22

V1 = 22 / 2 = 11

V1 = 22 / 11 = 2

V1 = 22 / 22 = 1

Divisor is n, possible values of remainder will be (0 – (n-1))

3. In the figure shown square 2 is formed by joining the mid – points of square1, square 3 is formed by joining the mid-points of square 2 and so on. In this way total five squares are drawn. The sides of the square 1 are ‘a’ cm.

1) What is the total area of all the five square?

**a) ( 4√2 - 1 ) a2 / ( 4√2 -1 )**

**b) (4√2- 1) a /4(√2-1)**

**c) 31/16 a2**

**d) none of these**

a / 2 cm

B A

2 1 90

(a / 2) cm

4 3

5 C

a cm

To find area of all 5 squares

Side of all 5 squares.

SIDE OF OUTER SQUARE WILL BE ‘a’ cm

BC2 = AB2 + AC2

= (a / 2 )2 + (a / 2 )2

BC2 = 2a2 / 4

BC = a /

Square 1 side = a

Square 2 side = a /

Square 3 side = a / = a / 2

Square 4 side = a / 2 = a / 2

Square 5 side =a / 2 = a / 4

Area of all 5 squares = a2 + (a / )2 + (a / 2)2 + (a / 2)2 + (a / 4)2

= 31 a2 / 16

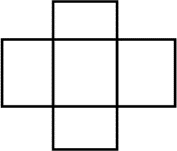
1. What is the number of positive integers that divide 1 × 2 × 3 × 4 × 5 × 6 × 7 × 8 × 9 × 10 without leaving a remainder??

(1 / 2) / (2 / 3)

3 / 4

2. All the digits 2,4,7,8 and 9 are placed in the grid, one in each cell, to form two three-digit numbers that are squares. Which digit is

placed in the Centre of the grid ?

 172 = 289 , 282 = 784

7

2 8 9

4

2 4 7 8 9 784 289

172 = 289 ; 282 = 784

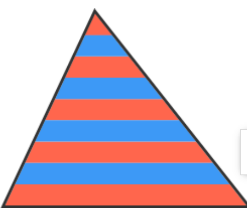
7

2 8 9

4

3. In the figure shown, a triangle is divided into nine stripes of equal height each parallel to the same side of the triangle. The Red

stripes have a total area of 135 square units. What is the area of the triangle in square units?



5 Red and 4 Blue stripes

Red area 135 Sq Units

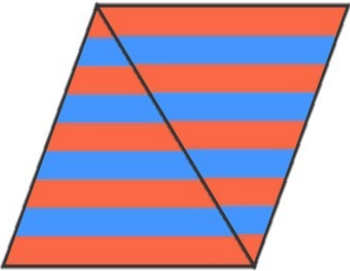
Total Area of the triangle.

The ratios of areas of red and blue = 5 : 4

5x= 135 🡪 x = 27

4x= 108 Area of Blue Colour

The area of triangle = 135 + 108 = 243 sq units



5x = 270 Sq units (Red)

x = 54

4x = 216. Sq units (Blue)

5x + 4x = 270 + 216 = 486 Sq units is the area of parallelogram.

486 / 2 = 243 Sq Units area of triangle