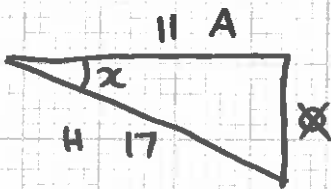


30TH NOVEMBER



$$\cos x = \frac{A}{H} = \frac{11}{17}$$

$$x = \cos^{-1}\left(\frac{11}{17}\right)$$

$$x = 49.7^\circ$$

2ND NOVEMBER

Opposite Sides of a rectangle are equal.

$$4x + 3 = 15$$

$$4x = 12$$

$$x = 3$$

$$2y - 1 = 4y - 10$$

$$-1 = 2y$$

$$9 = 2y$$

$$y = 4.5$$

$$\text{Length} = 15$$

$$\text{Width} = 2(4.5) - 1 = 8$$

$$\text{Area} = 15 \times 8 = 120 \text{ cm}^2$$

4TH/5TH NOVEMBER

$$\text{Total Volume} = 4\pi + 108\pi = 108\pi = \frac{1}{3} \times \pi \times 3^2 \times h \Rightarrow 324 = 9h \quad h = 36$$

Ratio of Volumes : Large : Small
 $108\pi : 4\pi$
 $= 27 : 1$

Length Scale
Factor

Large : Small
 $\sqrt[3]{27} : \sqrt[3]{1}$
 $3 : 1$

\therefore Diameter of Small Cone = 2cm Ht = 12cm $V = \frac{1}{3} \pi r^2 h$

Slant Ht of Small Cone
 $= \sqrt{12^2 + 1^2} = \sqrt{145}$

Curved SA of Small Cone
 $= \pi r l = \pi \times 1 \times \sqrt{145}$
 $= \pi \sqrt{145}$

Curved Area of Frustum
 $= 3\pi \sqrt{1305} - \pi \sqrt{145}$
 $= 302.6 \text{ cm}^2$

Slant Ht of Large Cone
 $= \sqrt{36^2 + 3^2} = \sqrt{1305}$

Curved SA of Large Cone
 $= 3\pi \sqrt{1305}$

Top Circle = π
 Btm Circle = 9π
 $\text{SA} = \pi + 9\pi + 302.6 = 334 \text{ cm}^2$

1ST NOVEMBER

	M.P.
$0 < h \leq 10$	$6 \times 5 = 30$
$10 < h \leq 20$	$9 \times 15 = 135$
$20 < h \leq 30$	$18 \times 25 = 450$
$30 < h \leq 40$	$12 \times 35 = 420$
$40 < h \leq 50$	$5 \times 45 = 225$
	<hr/>
	50 1260

Median : 25th / 26th value.

These lie in $20 < h \leq 30$ group.

So median group = $20 < h \leq 30$

$$\text{Mean} = \frac{1260}{50} = 25.2 \text{ cm}$$

3RD NOVEMBER

a) Roots - where the graph cuts the x-axis

$$\text{Roots} = -4 \text{ and } 1$$

b) $f(0) \rightarrow$ Start at $x = 0 \rightarrow$

move up/down till you hit the graph.

Read off the y-coordinate.

$$f(0) = -4$$

NOVEMBER 6TH

$$\frac{2x-3}{5} + \frac{3x}{4} = 3$$

(x20 - Common denominator)

$$+ \frac{20(2x-3)}{5} + \frac{5(3x)}{4} = 20(3)$$

$$4(2x-3) + 5(3x) = 60$$

$$8x-12 + 15x = 60$$

$$23x - 12 = 60$$

$$23x = 72$$

$$x = \frac{72}{23}$$

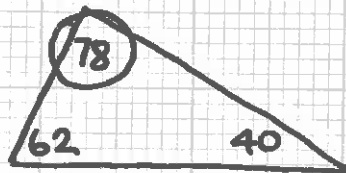
NOVEMBER 8TH

Sum of three internal angles of a triangle add to 180°

$$2x+30 + x+16 + 3x-10 = 180$$

$$6x + 36 = 180$$

$$6x = 144 \quad x = 24$$



NOVEMBER 9TH

$$\text{Area} = \frac{30}{360} \times \pi \times 15^2 = 58.9 \text{ cm}^2$$

$$\text{Arc Length} = \frac{30}{360} \times 2\pi \times 15 = 7.85$$

$$\begin{aligned} \text{Perimeter} &= 15 + 15 + 7.85 = \\ &= 37.85 \text{ cm} \end{aligned}$$

NOVEMBER 11TH / 12TH

$$\text{Curved Surface Area} = \frac{1}{2} \times (4\pi r^2) = 2\pi r^2$$

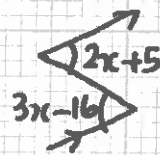
$$\text{Volume} = \frac{1}{2} \left(\frac{4}{3} \pi r^3 \right) = \frac{2}{3} \pi r^3 = \frac{250\pi}{3} \Rightarrow r^3 = 125 \quad r = 5$$

$$\text{Curved SA} = 2 \times \pi \times 5^2 = 50\pi$$

$$\text{Circle at Top} = \pi \times 5^2 = 25\pi$$

$$\text{Total SA} = 50\pi + 25\pi = 75\pi \text{ cm}^2 \quad (235.62 \text{ cm}^2)$$

NOVEMBER 7TH

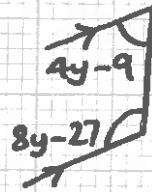


Alternate Angles are equal

$$2x+15 = 3x-16$$

$$15 = x - 16$$

$$31 = x$$



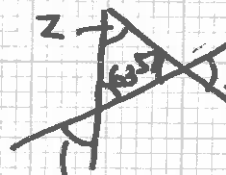
Co-interior Angles add to 180°

$$4y-9 + 8y-27 = 180$$

$$12y - 36 = 180$$

$$12y = 216$$

$$y = 18$$



$$2x+5 = 2(31)+5 = 57$$

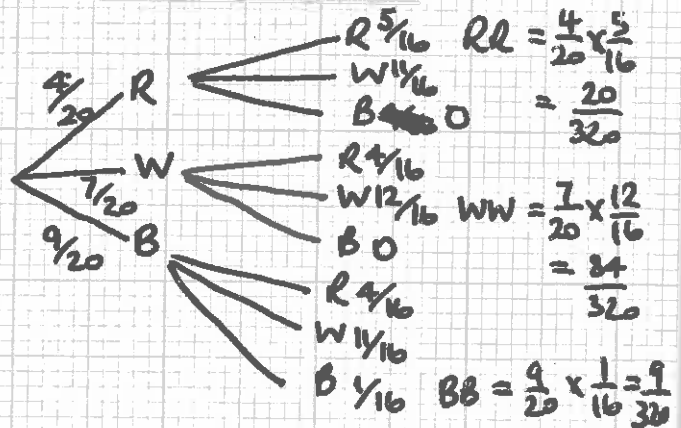
Vertically Opposite Angles are Equal.

$$4y-9 = 4(18)-9 = 63$$

Angles in a triangle add to 180

$$z = 180 - 63 - 57 = 60^\circ$$

NOVEMBER 10TH



$$R^2 = \frac{4}{29} \times \frac{3}{28} = \frac{12}{812} = \frac{3}{205}$$

$$W^2 = \frac{7}{20} \times \frac{6}{19} = \frac{42}{380} = \frac{21}{190}$$

$$B^2 = \frac{9}{20} \times \frac{8}{19} = \frac{72}{380} = \frac{18}{95}$$

$$= 1 - P(\text{Same Color})$$

$$= 1 - \frac{20}{320} - \frac{84}{320} - \frac{9}{320} = \frac{207}{320}$$

13TH NOVEMBER

Packages : Parcels

4 : 1

$$40 \div 5 = 8$$

32 packages

8 parcels

$$\text{Parcel Weight} = 8 \times 1.5 = 12 \text{ kg}$$

$$\begin{aligned} \text{Package Weight} &= 37.6 - 12 \\ &= 25.6 \text{ kg} \end{aligned}$$

$$\begin{aligned} \text{Each Package} \\ \text{Weights} & 25.6 \div 32 = 0.8 \text{ kg} \end{aligned}$$

15TH NOVEMBER

$$16x^2 + x = x + 9$$

$$16x^2 - 9 = 0$$

$$(4x - 3)(4x + 3) = 0$$

(Difference of 2 Squares)

$$x = \frac{3}{4} \quad x = -\frac{3}{4}$$

17TH NOVEMBER

$$R \propto \frac{1}{A}$$

$$R = \frac{k}{A}$$

$$12.1 = \frac{k}{1.5}$$

$$k = 12.1 \times 1.5 = 18.15$$

$$R = \frac{18.15}{A}$$

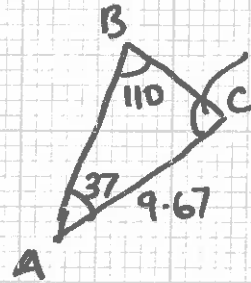
When $A = 4$

$$R = \frac{18.15}{4}$$

$$R = 4.5375$$

14TH NOVEMBER

$$AC = \frac{8.2}{\cos 32} = 9.67$$



$$180 - 110 - 37 = 33^\circ$$

$$\frac{BC}{\sin 37} = \frac{9.67}{\sin 110}$$

$$BC = \frac{9.67 \sin 37}{\sin 110}$$

$$BC = 6.19 \text{ cm.}$$

16TH NOVEMBER

$$\text{a) Increase}^{\%} = \frac{167102.20}{154500} = 1.0816$$

$$x (\text{decimal}) = \sqrt{1.0816} = 1.04$$

$$\therefore x = 4\%$$

$$\text{b) } 154500 = 103\% \text{ of original cost}$$

$$154500 \div 1.03 = \text{€}150000$$

18TH NOVEMBER

Capacity = 8600 l to nearest 100 l.

Largest Capacity = 8650 l.

$$95\% \text{ of } 8650 \text{ l} = 8217.5 \text{ l.}$$

Oil Rate = 740 l per minute to nearest 10 l.

Smallest Rate = 735 l per minute

$$\text{Longest Time} = 8217.5 \div 735 = 11.18 \text{ min.}$$

$$= 11 \text{ min } 11 \text{ secs.}$$

20TH NOVEMBER

$$\begin{aligned} \text{Exterior Angle} &= 180 - 165 \\ &= 15^\circ \end{aligned}$$

$$\text{Exterior Angle} = \frac{360}{n}$$

($n = n$: of Sides)

$$15 = \frac{360}{n}$$

$$n = \frac{360}{15} = 24 \text{ sides}$$

22ND NOVEMBER

$$x = 2 \cdot 125$$

$$\begin{array}{r} 10x = 21 \cdot 25 \\ 1000x = 2125 \cdot 25 \end{array} -$$

$$990x = 2104$$

$$x = \frac{2104}{990} = \frac{1052}{495}$$

$$\left(\text{or } 2 \frac{62}{495} \right)$$

24TH NOVEMBER

$$Q \propto \frac{1}{t^2}$$

$$Q = \frac{k}{t^2}$$

$$320 = \frac{k}{0.25}$$

$$k = 80$$

$$Q = \frac{80}{t^2}$$

When $Q = 5$

$$5 = \frac{80}{t^2}$$

$$t^2 = 16$$

$$t = \pm 4$$

21ST NOVEMBER

$$\text{Integer} = n$$

$$\text{Next Integer} = n+1$$

$$\begin{aligned} (n+1)^2 - n^2 &= n^2 + 2n + 1 - n^2 \\ &= 2n + 1 \quad \text{--- (1)} \end{aligned}$$

$$\text{Sum of Integers} = n + n + 1 = 2n + 1 \quad \text{--- (2)}$$

$$\text{(1)} = \text{(2)} \therefore \text{True}$$

23RD NOVEMBER

$$\angle \text{RTA} = 73^\circ \text{ (Alternate Segment Theorem)}$$

$$\angle \text{STA} = 73 - 26 = 47^\circ$$

25TH/26TH NOVEMBER

TIME	FREQUENCY	MIDPOINT	MARKS
$160 < t \leq 180$	9	170	1530
$180 < t \leq 200$	26	190	4940
$200 < t \leq 220$	33	210	6930
$220 < t \leq 240$	12	230	2760
$240 < t \leq 260$	9	250	2250
$260 < t \leq 280$	3	270	810
	<u>92</u>		<u>19220</u>

$$\text{Mean} = 19220 \div 92 = 208.9 \text{ mins}$$

27TH NOVEMBER

$$\text{Largest Density} = \frac{\text{Largest Mass}}{\text{Smallest Volume}}$$

$$\text{Largest Mass} = 1180.5 \text{ g}$$

$$\text{Smallest Volume} = \frac{4}{3} \pi r^3 = \frac{4}{3} \pi (6.15)^3$$

$$\begin{aligned} \text{Largest Density} &= \frac{1180.5}{\frac{4}{3} \pi (6.15)^3} \\ &= 1.21 \text{ g/cm}^3 \end{aligned}$$

28TH NOVEMBER

$$3x^2 - 4x - 4 = (3x + 2)(x - 2)$$

$$9x^2 - 4 = (3x - 2)(3x + 2)$$

$$\frac{1}{(3x+2)(x-2)} \div \frac{1}{(3x-2)(3x+2)}$$

$$= \frac{1}{(3x+2)(x-2)} \times \frac{(3x-2)(3x+2)}{1}$$

$$= \frac{(3x-2)(\cancel{3x+2})}{(\cancel{3x+2})(x-2)} = \frac{3x-2}{x-2}$$

$$a=3 \quad b=-2 \quad c=1 \quad d=-2$$

28TH NOVEMBER

$$y = 2x^2 + 3x - 10 \quad \text{--- ①}$$

$$y = 2x + 5 \quad \text{--- ②}$$

Sub ② into ①

$$2x + 5 = 2x^2 + 3x - 10$$

$$0 = 2x^2 + x - 15$$

$$0 = (2x - 5)(x + 3)$$

$$\begin{pmatrix} x = \frac{5}{2} \\ y = 10 \end{pmatrix} \quad \begin{pmatrix} x = -3 \\ y = -1 \end{pmatrix}$$