

Forum: [Hack Forums](#)

Thread: [Geometry Questions](#)

Sharjah - September 4, 2017, 6:54 pm

Pretty simple questions, I just can't remember how to do them since HS lol..

If you are too lazy to do all of them, answering just one helps me out a lot!

Thank you!

I need to find the area of this trapezoid:

<http://prntscr.com/gh6fym>

(and if anyone can show some work, that'd be great just so I know how to do it in the future)

This one:

<http://prntscr.com/gh6g33>

This one:

<http://prntscr.com/gh6g54>

This one:

<http://prntscr.com/gh6g73>

AND this one:

<http://prntscr.com/gh6gba>

The Just Conman - September 4, 2017, 10:14 pm

Q1: The formula for the area of a trapezoid is $(a+b)*h/2$ where a and be are the 2 parallel sides and h is the distance between them

$$\text{Therefore Area} = ((9.4 + 23.5)*18.8)/2 = 309.26 \text{ ft}^2$$

Q2: The formula for a spheres volume is $(4/3)*\pi*r^3$ so to find the volume between 2 spheres find the bigger volume then minus the

$$\text{smaller on, Volume} = (4/3)*\pi*30^3 - (4/3)*\pi*(27)^3 = 30649.38 \text{ mm}^3$$

Q3: The perimeter will be equal to the circumference of 2 circles (because 4 half circles = 2 full circles) and the base length

To find the 2 circumferences we use $2*\pi*r$ and double it $2*2*\pi*5 = 62.832$ inches then add the length of the base which will

$$\text{equal } 8*\text{radius therefore Perimeter} = 62.832 + 8*5 = 102.832 \text{ inches}$$

For Area it will be the same as 2 full circles therefore we can just double $\pi*r^2$ and Area = $2*\pi*5^2 = 157.080 \text{ inches}^2$

Q4: So firstly takeoff 4 inches from each length to allow for the border. so the screen measurements are 56 inches and 48 inches.

Now we simply apply Pythagoras theory that $a^2 + b^2 = c^2$ where a and b are the perpendicular side lengths and c is

hypotenuses length. Therefore we have a and b and need c so $\text{Length} = \text{SQRT}(56^2 + 48^2) = 73.8$ inches

Q5: Similar to question 4, once we have the 2 perpendicular lengths we just apply Pythagoras theory.

$$\text{Length} = \text{SQRT}(10^2 + 14^2) = 17.2 \text{ yards}$$

Hope this helps you out, if you have any further questions feel free to ask

Sharjah - September 5, 2017, 12:31 am

(Sep 4, 2017 10:14 PM)The Just Conman Wrote: [\[CITE\]](#) Q1: The formula for the area of a trapezoid is $(a+b)*h/2$ where a and be are the 2 parallel sides and h is the distance between them

$$\text{Therefore Area} = ((9.4 + 23.5)*18.8)/2 = 309.26 \text{ ft}^2$$

Q2: The formula for a spheres volume is $(4/3)*\pi*r^3$ so to find the volume between 2 spheres find the bigger volume then minus the

$$\text{smaller on, Volume} = (4/3)*\pi*30^3 - (4/3)*\pi*(27)^3 = 30649.38 \text{ mm}^3$$

Q3: The perimeter will be equal to the circumference of 2 circles (because 4 half circles = 2 full circles) and the base length

To find the 2 circumferences we use $2*\pi*r$ and double it $2*2*\pi*5 = 62.832$ inches then add the length of the base which will

$$\text{equal } 8*\text{radius therefore Perimeter} = 62.832 + 8*5 = 102.832 \text{ inches}$$

$$\text{For Area it will be the same as 2 full circles therefore we can just double } \pi*r^2 \text{ and Area} = 2*\pi*5^2 = 157.080 \text{ inches}^2$$

Q4: So firstly takeoff 4 inches from each length to allow for the border. so the screen measurements are 56 inches and 48 inches.

Now we simply apply Pythagoras theory that $a^2 + b^2 = c^2$ where a and b are the perpendicular side lengths and c is

hypotenuses length. Therefore we have a and b and need c so $\text{Length} = \text{SQRT}(56^2 + 48^2) = 73.8$ inches

Q5: Similar to question 4, once we have the 2 perpendicular lengths we just apply Pythagoras theory.

$$\text{Length} = \text{SQRT}(10^2 + 14^2) = 17.2 \text{ yards}$$

Hope this helps you out, if you have any further questions feel free to ask

Awesome! Thank you! just have a few questions.

On question # 3, how did you get the base length to be 8? Is that the base length for all numbers? if the number was 4, would it still be 8?

On question # 4, why would you take 4 inches off? Is it because it said 2 inches off each side?

The Just Conman - September 5, 2017, 2:16 am

(Sep 5, 2017 12:31 AM)?ossen Wrote: [\[CITE\]](#) Awesome! Thank you! just have a few questions.

On question # 3, how did you get the base length to be 8? Is that the base length for all numbers? if

the number was 4, would it still be 8?

On question # 4, why would you take 4 inches off? Is it because it said 2 inches off each side?
Sorry that is wasn't clear enough, I was in a bit of a rush.

Q4: So the base length isn't 8, but rather $8 \times \text{radius}$. I get this because to we know that the length of section through a circle is its diameter, which is equal to $2 \times \text{Radius}$. Therefore if we have the length of 4 circles the base length will be $2 \times \text{Radius} \times 4 = 8 \times \text{Radius}$ which in this case is 8×5

Q5: So if we are removing 2 Inches of each side to form a border, we will need to remove the width of the border twice, as the border reduces the width on both the left and right of the screen and both the top and the bottom. If your having trouble visualising this one id strongly recommend drawing the rectangle with the 2 inch border and it should help you see.

Sharjah - September 5, 2017, 2:19 am

(Sep 5, 2017 02:16 AM)The Just Conman Wrote: [\[CITE\]](#) Sorry that is wasn't clear enough, I was in a bit of a rush.

Q4: So the base length isn't 8, but rather $8 \times \text{radius}$. I get this because to we know that the length of section through a circle is its diameter, which is equal to $2 \times \text{Radius}$. Therefore if we have the length of 4 circles the base length will be $2 \times \text{Radius} \times 4 = 8 \times \text{Radius}$ which in this case is 8×5

Q5: So if we are removing 2 Inches of each side to form a border, we will need to remove the width of the border twice, as the border reduces the width on both the left and right of the screen and both the top and the bottom. If your having trouble visualising this one id strongly recommend drawing the rectangle with the 2 inch border and it should help you see.

Got question 5. Still confused as for as the 3rd question goes and how 8 got there.

The Just Conman - September 5, 2017, 2:22 am

(Sep 5, 2017 02:19 AM)?ossen Wrote: [\[CITE\]](#) Got question 5. Still confused as for as the 3rd question goes and how 8 got there.

I'll quickly draw you up a picture, give me one sec

EDIT:

So here is my awful drawing: <https://imgur.com/DgkCMY4>

So hopefully this helps you to see that the length of the base consists of 8 lengths of the radius

Sharjah - September 5, 2017, 2:55 am

(Sep 5, 2017 02:22 AM)The Just Conman Wrote: [\[CITE\]](#) I'll quickly draw you up a picture, give me one sec

EDIT:

So here is my awful drawing: <https://imgur.com/DgkCMY4>

So hopefully this helps you to see that the length of the base consists of 8 lengths of the radius
Ohh so it's 8 because each circles radius = 1. 4 circles = 2 for the diameter of the length of the circle?

Targus - September 6, 2017, 8:55 pm

(Sep 5, 2017 02:55 AM)?ossen Wrote: [\[CITE\]](#) Ohh so it's 8 because each circles radius = 1. 4 circles

= 2 for the diameter of the length of the circle?

Just to re-explain @The Just Conman's answer (he did it right, FYI):

A radius of a circle is $\frac{1}{2}$ (half) of a diameter of the circle itself. The center of the circle is equidistant from all sides of the circle, so regardless of where your radius may be, as long as its starting point is from the center of the circle and its ending point being on any side of the circle, the distance will always be the same. I.e.,

r = radius

d = diameter

Diameter = 2 radius [twice the radius] OR $d = 2r$

Let's get back to @The Just Conman's explanation here:

All the semicircles (half a circle) have equal radius/diameter length. The method @The Just Conman used in finding the length of the base (the combined length of all those diameters of the semicircle) is to find the sum of all the radius of those semicircles.

Each semicircle in that diagram has 2 radius, AKA a diameter. Since we have four semicircles, $2 \times 4 = 8$. [hope this solved your question of how he got 8]

Since we know $d = 2r$ (for one semicircle/circle) AND that we have four semicircles, $4 \text{ semicircles} \times 2r = 8r$. Since $r = 5$, $8(5) = 40$.

For finding the major sector (circumference) of the semicircle, formula is $\frac{1}{2} 2\pi r$, when simplified, πr . You can find the circumference of all four semicircles instantaneously with $4 \times (\pi r)$. Perimeter = base + circumference of all four semicircles

The Just Conman - September 6, 2017, 10:19 pm

(Sep 6, 2017 08:55 PM)Targus Wrote: [\[CITE\]](#) Just to re-explain @The Just Conman's answer (he did it right, FYI):

A radius of a circle is $\frac{1}{2}$ (half) of a diameter of the circle itself. The center of the circle is equidistant from all sides of the circle, so regardless of where your radius may be, as long as its starting point is from the center of the circle and its ending point being on any side of the circle, the distance will always be the same. I.e.,

r = radius

d = diameter

Diameter = 2 radius [twice the radius] OR $d = 2r$

Let's get back to @The Just Conman's explanation here:

All the semicircles (half a circle) have equal radius/diameter length. The method @The Just Conman used in finding the length of the base (the combined length of all those diameters of the semicircle) is to find the sum of all the radius of those semicircles.

Each semicircle in that diagram has 2 radius, AKA a diameter. Since we have four semicircles, $2 \times 4 = 8$. [hope this solved your question of how he got 8]

Since we know $d = 2r$ (for one semicircle/circle) AND that we have four semicircles, $4 \text{ semicircles} \times 2r = 8r$. Since $r = 5$, $8(5) = 40$.

For finding the major sector (circumference) of the semicircle, formula is $\frac{1}{2} 2\pi r$, when simplified, πr . You can find the circumference of all four semicircles instantaneously with $4 \times (\pi r)$. Perimeter = base + circumference of all four semicircles

Cheers for doing that, you explained much better than me (plus your diagrams are 100 times better)