

Questions on 6.5 HW? Work on ACT review questions below...

Ding's Diner advertised this daily lunch special:

"Choose 1 item from each column—only \$4.95!"

Thus, each daily lunch special consists of a salad, a soup, a sandwich, and a drink.

Salads	Soups	Sandwiches	Drinks
cole slaw lettuce potato	onion tomato	meat loaf chicken hamburger ham tenderloin	milk cola coffee tea

F. 4

G. 14

H. 30

I. 120

J. 180

3

2

5

4

$3 \cdot 2 \cdot 5 \cdot 4$

How many different daily lunch specials are possible?

6. A boat departs Port Isabelle, Texas, traveling to an oil rig. The oil rig is located 9 miles east and 12 miles north of the boat's departure point. About how many miles is the oil rig from the departure point?

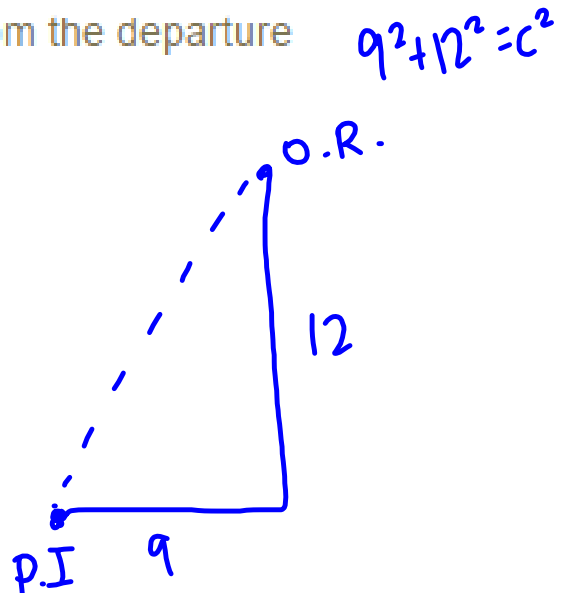
F. 3

G. $\sqrt{63}$

H. 15

I. 21

J. 225



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5. A wheel rotates r times per minute. Write a formula for how many degrees it rotates in t seconds.

$$\frac{r \text{ times}}{1 \text{ min.}} \cdot \frac{1 \text{ min}}{60 \text{ sec}} = \frac{r \text{ times}}{60 \text{ sec}} = t$$

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Name _____ Trigonometric Functions | 6.5

Set Topic: Values of cosine in the coordinate plane

Use the given point on the circle to find the values of cosine. Recall that $\sqrt{a^2 + b^2} = r$ and $\cos \theta = \frac{x}{r}$.

8.50 x 11.00 in


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The wheels on the wagons that the pioneers used to cross the plains were smaller in the front than in the back. The front wheel had 12 spokes. The top of the front wheel measured 44 inches from the ground. The rear wheel had 16 spokes. The top of the rear wheel measured 59 inches from the ground. (For these problems disregard the hub at the center of the wheel. Assume the spokes meet in the center at a point.)



(Leave π in your answers.)

- Find the area and the circumference of each wheel.

$$\text{FRONT: } 44\pi = C \quad A = \pi(22)^2$$

$$\text{Rear: } 59\pi = C \quad A = \pi(29.5)^2$$
- Determine the central angle between the spokes on each wheel.
- Find the distance on the circumference between two consecutive spokes for each wheel.

8.50 x 11.00 in

6.6 Diggin' It

A Develop Understanding Task

Alyce, Javier, and Veronica are responsible for preparing a recently discovered archeological site. The people who used to inhabit this site built their city around a central tower. The first job of the planning team is to mark the site using stakes so they can keep track of where each discovered item was located.



Part I

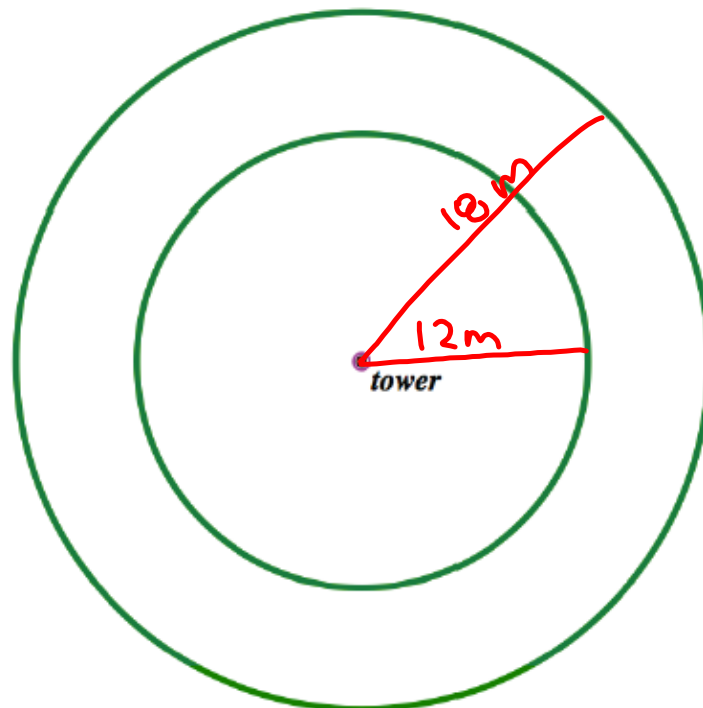
1. Alyce suggests that the team place stakes in a circle around the tower, with the distance between the markers on each circle being equal to the radius of the circle. Javier likes this idea but says that using this strategy, the number of markers needed would depend on how far away the circle is from the center tower. Do you agree or disagree with Javier's statement? Explain.

No,

$$C = 2\pi r$$

$$\frac{2\pi r}{r} = 2\pi \text{ sections of "r" around any circle.}$$

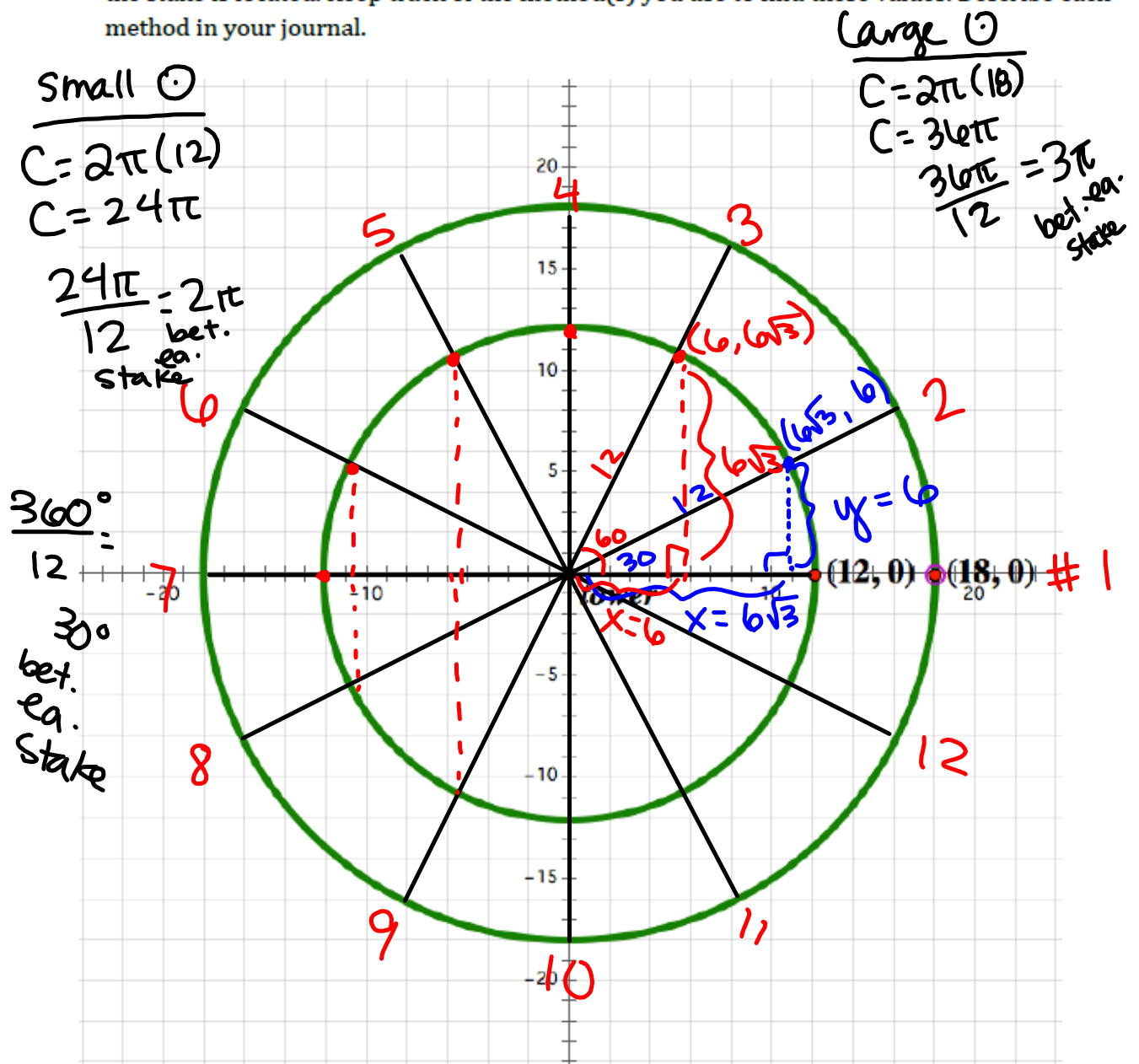
2. Show where the stakes would be located using Alyce's method if one set of markers were to be placed on a circle 12 meters from the center and a second set on a circle 18 meters from the center.



Part II

After looking at the model, Veronica says they need to have more stakes if they intend to be specific with the location of the artifacts. Since most archaeological sites use a grid to mark off sections, Veronica suggests evenly spacing 12 stakes around each circle and using the coordinate grid to label points. Alyce also wants to make sure they record the distance around the circle to each stake. The central tower is located at the origin and the first of each set of 12 stakes for the inner and outer circles is placed at the points (12, 0) and (18, 0), respectively.

- Your job is to determine the x and y-coordinates for each of the remaining stakes on each circle, as well as the arc length from the points (12, 0) or (18, 0), depending on which circle the stake is located. Keep track of the method(s) you use to find these values. Describe each method in your journal.



Part III

Javier suggests they record the location of each stake and its distance around the circle for the set of stakes on each circle. Veronica suggests it might also be interesting to record the ratio of the arc length to the radius for each circle.

4. Help Javier and Veronica complete this table.

	Inner Circle: $r = 12$ meters			Outer Circle: $r = 18$ meters		
	Location (x, y)	Arc length Distance from (12,0) along circular path	Ratio of arc length to radius	Location	Distance from (18,0) along circular path	Ratio of arc length to radius
Stake 1	(12, 0)	0	0	(18, 0)	0	0
Stake 2	30° $(6\sqrt{3}, 6)$	2π	$\frac{2\pi}{12} = \frac{\pi}{6}$	$(9\sqrt{3}, 9)$	3π	$\frac{\pi}{6}$
Stake 3	60° $(6, 6\sqrt{3})$	4π	$\frac{4\pi}{12} = \frac{\pi}{3}$	$(9, 9\sqrt{3})$	6π	$\frac{\pi}{3}$
Stake 4	$(0, 12)$	6π	$\frac{6\pi}{12} = \frac{\pi}{2}$	$(0, 18)$	9π	$\frac{\pi}{2}$
Stake 5	$(-6, 6\sqrt{3})$	8π	$\frac{8\pi}{12} = \frac{2\pi}{3}$	$(-9, 9\sqrt{3})$	12π	$\frac{2\pi}{3}$
Stake 6	$(-6\sqrt{3}, 6)$	10π	$\frac{10\pi}{12} = \frac{5\pi}{6}$	$(-9\sqrt{3}, 9)$	15π	$\frac{5\pi}{6}$
Stake 7	$(-12, 0)$	12π	$\frac{12\pi}{12} = \pi$	$(-18, 0)$	18π	π
Stake 8	$(-6\sqrt{3}, -6)$	14π	$\frac{14\pi}{12} = \frac{7\pi}{6}$	$(-9\sqrt{3}, -9)$	21π	$\frac{7\pi}{6}$
Stake 9	$(-6, -6\sqrt{3})$	16π	$\frac{16\pi}{12} = \frac{4\pi}{3}$	$(-9, -9\sqrt{3})$	24π	$\frac{4\pi}{3}$
Stake 10	$(0, -12)$	18π	$\frac{18\pi}{12} = \frac{3\pi}{2}$	$(0, -18)$	27π	$\frac{3\pi}{2}$
Stake 11	$(6, -6\sqrt{3})$	20π	$\frac{20\pi}{12} = \frac{5\pi}{3}$	$(9, -9\sqrt{3})$	30π	$\frac{5\pi}{3}$
Stake 12	$(6\sqrt{3}, -6)$	22π	$\frac{22\pi}{12} = \frac{11\pi}{6}$	$(9\sqrt{3}, -9)$	33π	$\frac{11\pi}{6}$

* SKIP PGS.
38, 39, 41

↑
radian measure
for each angle.

5. What interesting patterns might Alyce, Javier and Veronica notice in their work and their table? Summarize any interesting things you have noticed in your journal.

Homework

Finish 6.6 "Ready, Set, Go"