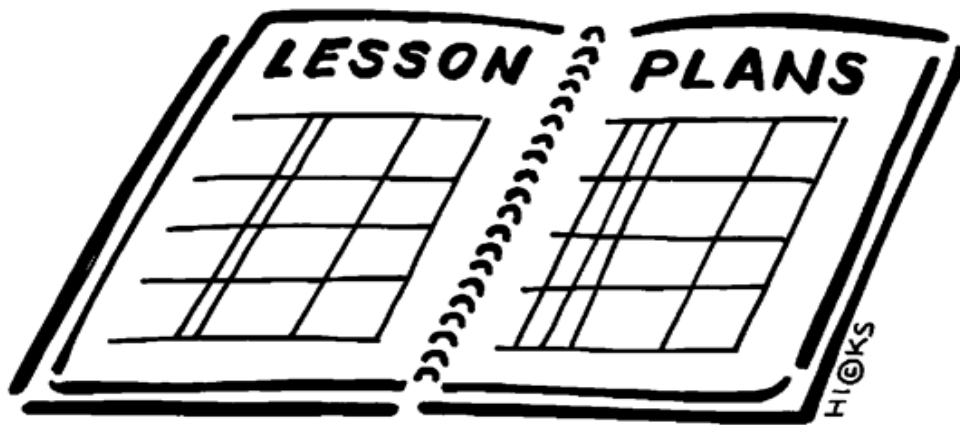




كليات التقنية العليا
HIGHER COLLEGES OF TECHNOLOGY

Circumference & Area of the circles (Lesson plan)



Student Information:

Name: Aasha Bani Shemali

Email: H00225265@hct.ac.ae

Class: AE5

Grade Level: Grade 7 section 1

Submission Date: 5th of May 2014

Teacher Name:

Miss Kate Quinlan

| | | |
|---|-----------------------|--|
| Name: Aaesha Bani Shemali H00225265 | Grade Level: 7 | CCSS Math Strand: <u>Geometry (7.G.4)</u> |
|---|-----------------------|--|

CCSS Standards:

Expressions and Equations (7.EE)

(7.G.4) Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.

Lesson 2

Main Lesson Aims and objective (Concepts, Procedures, & Processes):

Develop a formula for the area of a circle.


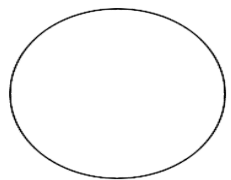

- At the end of the lesson, students should be able to answer “How are the circumference and area of a circle alike? How are they different?”

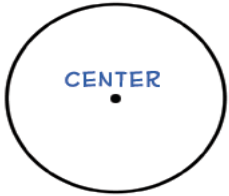
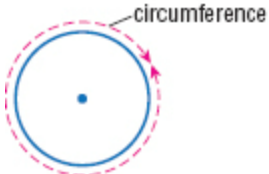
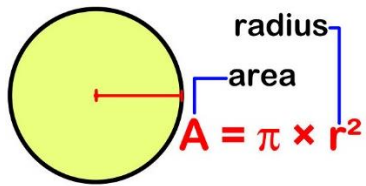
(Glencoe Math course 2 Teacher Edition “Plan & Present” Chapter 6, Lesson 7 “What’s the Math”)

Materials:

| | |
|-------------------------------------|---|
| teacher books | Glencoe Math course 2 (grade 7) Teacher Edition “Plan & Present” Chapter8, Lesson 2 “Common Core State Standers” “Teach the concept” |
| student book(s) | Glencoe Math p 718 #a Glencoe Math 720 #1-2 Glencoe Math p 720 #1-3 Glencoe Math p 723 #22 |
| worksheets/ papers | - A4 papers for each student |
| teacher materials | - White board - Smart board - Rewards (money) - Timer bomb |
| student materials/ manipulatives | - Students laptop tablets - A2 coloured board of each group to find the area - Markers - Colourful pens - Calculators |
| technology | - PowerPoint of the lesson - Smart board |

Key vocabulary with definitions (and pictures if appropriate):

| word | glossary definition | image |
|----------|---|---|
| Diameter | diameter The distance across a circle through its center. |  |
| circle | circle The set of all points in a plane that are the same distance from a given point called the center. |  |
| Radius | radius The distance from the center of a circle to any point on the circle. |  |

| | | |
|---------------|--|---|
| Center | center The point from which all points on circle are the same distance. |  |
| Circumference | circumference The distance around a circle. |  |
| Area | The area of the circle equals the products of π and the square of its radius r . |  |

Cited from: *My Math Grade 2 Students Edition (Ebook) Chapter 8, "Glossary"*

Students' Prior Knowledge:

- Students know what know all the vocabulary except of area.
- Students are familiar of pi and radius
- Students should know that there is a formula to find area

Possible Problems and Misconceptions:

If students have trouble finding the areas of circles,

Then use one of these reteach options:

1. **Quick Review Math Handbook**, p. 335
2. Have students write a side-by-side comparison of the formulas for the circumference and the area of a circle. Have them divide a piece of paper in half and include rows for words, formulas, pictures showing circle terms and radius, the kinds of units, and an example.

Round-Off Error Refer students to Example 1. Explain to them that the actual area is slightly different than 12.56 square inches because the value of n was approximated to be 3.14. Explain to students that this demonstrates round-off error. Round-off error is the difference between an approximation of a number used in computation and its exact value. You may want to have students approximate the value of n to be 3.14159 and then find the area to the nearest hundredth. **about 12.57 square inches**

- Some students may have problem from using number line.

Glencoe Math course 2 Teacher Edition "Plan & Present" Chapter8, Lesson2 "Teach the concept"

Lesson Schedule

Targeted teacher questions to promote HOTS

Student communication and use of math language

Classroom management strategy:

- T use count down from 5 to 0. This strategy help students to wrap up before submitting something or answering in their board.
- T use eyes up strategy. T will say "Eyes up" and students leave everything and look to the teacher.
- T use money (100, 200, 500, 1000) to reward students and to have active classroom

| | |
|--|---|
| <p>Engage (warm up, review prior knowledge):</p> <ul style="list-style-type: none"> ➤ Presenting the magical lollipop: <ul style="list-style-type: none"> - T: in this magical lollipop there is something that you use daily. So can you guess what is inside it? - Ss will use their imagination to guess what inside the magical lollipop. ➤ Circles around us: <ul style="list-style-type: none"> - T: in real life we have steering and can you tell me any circle shape in our classroom?. - S: we have clock, mat,etc. (I assume) | <p>2 minutes</p> <p>2 minutes</p> |
| <p>Core (introduce and practice new concepts & procedures):</p> <ul style="list-style-type: none"> ➤ Area A story <ul style="list-style-type: none"> - T will tell story of a painter by reading the slides: - Slide 1: Once upon a time, there was a painter who have a circle wall to paint. - Slide 2: He need to buy correct amount of water colors in order to paint □ so he need to know (The Area of the circle) - Slide 3: He knows: circumference, diameter and radius - T will ask “ so circumference is what?Diameter is what? Radius is what ?..... but he need the area to know the exact amount. - Ss will answer the teacher questions by showing where is circumference, diameter and radius? ➤ Teaching the concept <ul style="list-style-type: none"> - T will present the formula of the area of the circle - T: so the area of circle is pi time radius square. Can you tell me what is pi? - Ss will give the value of the pi - T: r square is like $(5)^2$ is 5 times 5 ➤ Checking students understanding of the formula <ul style="list-style-type: none"> - To check students understanding of the formula T will display a question and they need to choose what is not the formula of the area. - T: Cross out the formula that is not used for finding the area of the circle - S will vote and choose the correct answer and give explanation ➤ Teaching how to find the area as a whole class <ul style="list-style-type: none"> - T will explain the first example in the board - T will solve first question on the board as a whole class - T will ask “what we will do” in each step - S: will assume each step ➤ Individual activity <ul style="list-style-type: none"> - T will ask students to find the area of the circle by them self and first three who solve it will get 100. - T: find the area and first three who will answer will get 100 - Ss will complete the task as individual ➤ Group activity <ul style="list-style-type: none"> - T will ask students to “find area for each circle as a group and if you solve it correctly you will get 500 you only have 3 minutes to do it” “take your boards and markers” - Ss will complete the task affectively - T will monitor each group to help if they need it | <p>7 minutes</p> <p>5 minutes</p> <p>3 minutes</p> <p>7 minutes</p> <p>5 minutes</p> <p>5 minutes</p> |

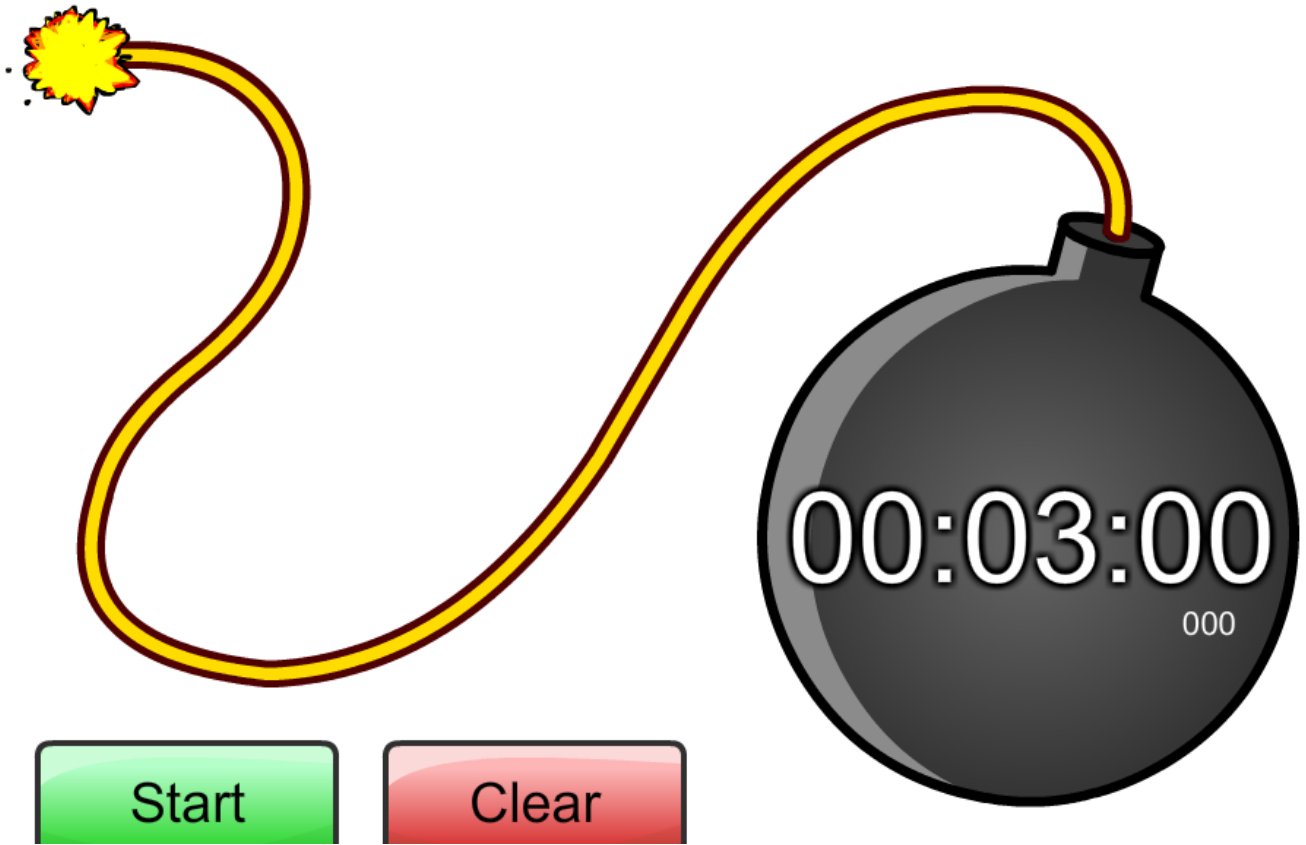
| | |
|---|----------------------------|
| <ul style="list-style-type: none"> ➤ Challenge question - T will ask students “What if you have d to find the Area?” “Hint: remember what we learn in the first lesson... r=?” anyone will solve it will get 500. Then, I will choose one students in the board to solve in the board... | 7 minutes |
| <p>Close (wrap up, discussion, brief review activity or assessment):</p> <ul style="list-style-type: none"> ➤ Discussion <ul style="list-style-type: none"> - T will ask “What did we learn today” and students will answer the question as a whole class. ➤ Wrap up activity (if students have time) <ul style="list-style-type: none"> - T will give each students a circle and they need to colour each part differently. (I will give one students to distributed to the class the circles - Ss will complete the task as individual - Ss will present their work by raising it. | 2 minutes 5 minutes |

Note: every question or the lesson order are in the power point

A decorative border at the top of the page features a variety of colorful paper clips (red, blue, green, yellow, purple) and small black stars. In the bottom right corner of this border, there is a pink pencil and two circular icons: one with a red heart and another with a yellow smiley face.

Materials (Appendix)

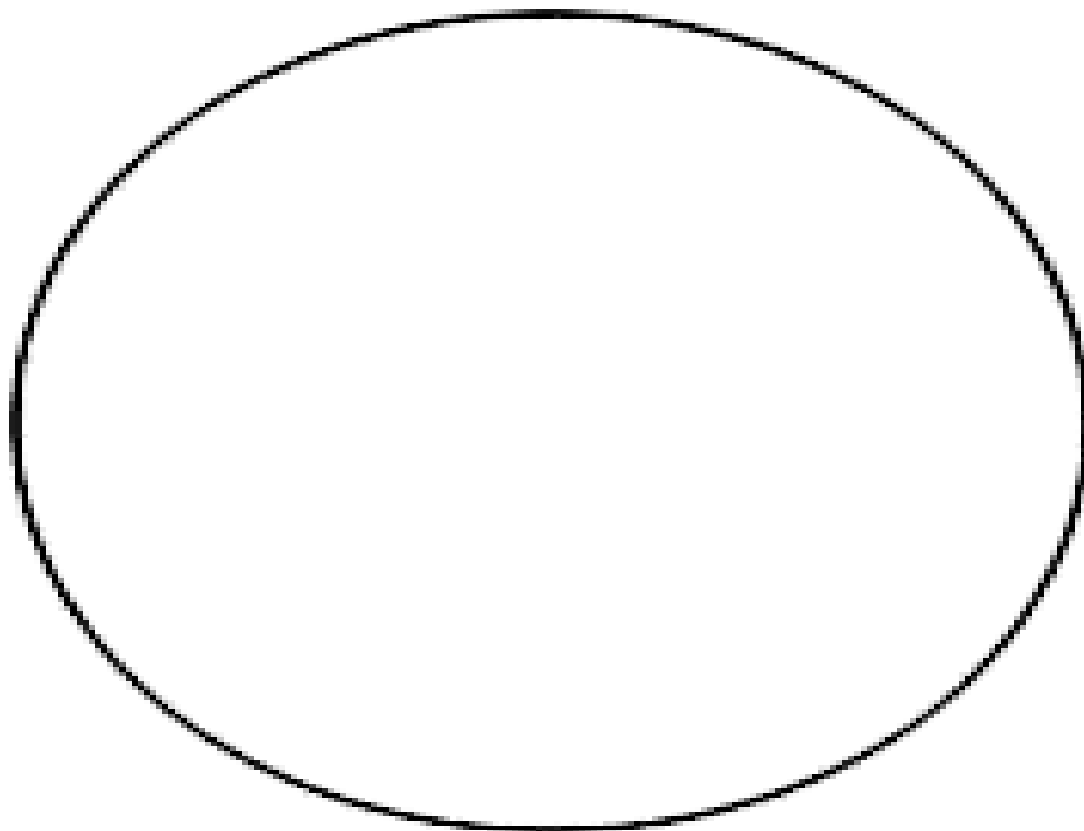
Timer bomb



<http://www.online-stopwatch.com/bomb-countdown/full-screen/>

Circles





Student book

Key Concept

Find the Area of a Circle

Work Zone

Words The area A of a circle equals the product of π and the square of its radius r .

Model



Symbols $A = \pi r^2$

Examples



- 1.** Find the area of the circle. Use 3.14 for π .



Estimate $3 \times 2 \times 2 = 12$

$A = \pi r^2$ Area of a circle

$A \approx 3.14 \cdot 2^2$ Replace r with 2.

$A \approx 3.14 \cdot 4$ $2^2 = 2 \cdot 2 = 4$

$A \approx 12.56$ Multiply.

Check for Reasonableness $12.56 \approx 12$ ✓

The area of the circle is approximately 12.56 square inches.

- 2.** Find the area of a circle with a radius of 14 centimeters. Use $\frac{22}{7}$ for π .

Estimate $3 \times 14 \times 14 = 588$

$A = \pi r^2$ Area of a circle

$A \approx \frac{22}{7} \cdot 14^2$ Replace π with $\frac{22}{7}$ and r with 14.

$A \approx \frac{22}{7} \cdot 196$ $14^2 = 14 \cdot 14 = 196$

$A \approx \frac{22}{7} \cdot 196$ Divide by the GCF 7.

$A \approx 616$ Multiply.

Check for Reasonableness $616 \approx 588$ ✓

The area of the circle is approximately 616 square centimeters.

Get It? Do this problem to find out.

- a. Find the area of a circle with a radius of 3.2 centimeters. Round to the nearest tenth.

a. _____

STOP and Reflect

Cross out the formula that is not used for finding the area of a circle.

$$A = \pi r^2 \quad A = 5.14r^2$$

$$A = \frac{22}{7}r^2 \quad A = \frac{1}{2}bh$$



Guided Practice



Find the area of each circle. Round to the nearest tenth. Use 3.14 or $\frac{22}{7}$

for π . (Examples 1–3)

1.



2.



3. diameter = 16 m

4. Rondell draws the semicircle shown at the right. What is the area of the semicircle?

Use 3.14 for π . (Examples 4 and 5)



5. **Building on the Essential Question** Name one way the circumference and area of a circle are the same and one way they are different. _____

Rate Yourself!

Are you ready to move on?
 Shade the section that applies.



For more help, go online to access a Personal Tutor.



Copyright © The McGraw-Hill Companies, Inc.

Independent Practice

[Go online for Step-by-Step Solutions](#)


Find the area of each circle. Round to the nearest tenth. Use 3.14 or $\frac{22}{7}$ for π . (Examples 1–3)

1.



2.



3.



4. diameter = 10.5 in.

5. radius = 6.3 mm

6. radius = $3\frac{1}{4}$ yd

7. Refer to the pets problem at the beginning of this lesson. Find the area, to the nearest tenth, of grass that Adrienne's dog may run in if the leash is 9 feet long. (Example 3) _____

8. A rotating sprinkler that sprays water at a radius of 11 feet is used to water a lawn. Find the area of the lawn that is watered. Use 3.14 for π .

(Example 3) _____

Find the area of each semicircle. Round to the nearest tenth. Use 3.14 for π . (Example 4)

9.



10.



11.



12. The tunnel opening shown is a semicircle. Find the area, to the nearest tenth, of the opening of the tunnel enclosed by the semicircle. (Example 5)



Other materials are in the class which I bring it from the start of week2

Reference List:

Carter, J.A., Cuevas, G. J., Day, J., Malloy, C., Kersaint, G., McClain, K. Molix-Bailey, R.J., Lunchin, B. M., Price, J., Reynosa, M. E., Silbey, R., Vielhaber, K. & Willard, T. (2013). *Glencoe Math your Common Core Edition: Teacher Walkaround Edition (Course 2 – Volume 3)*. Columbus: MC Graw Hill Educion.