

GEOMETRY ITEMS: OVERVIEW

Resources:

Attached you will find **practice items** for **Geometry**. These practice items are packaged so that you will have weekly items to use in your classroom as bell ringers or engagement items. Three items per day have been provided for this domain and should take no more than fifteen minutes of classroom instruction.

The purpose of using these practice items daily is to be able to formatively assess student understanding and any misconceptions they may have in this domain. Being able to gather evidence of student learning and misconceptions in the moment, will give you the flexibility to change your instruction to meet their needs. As the instructional decision-maker, you are able to adjust your methods for whole class or small groups to address student misconceptions and move them toward proficiency.

The practice items represent a variety of standards from the **Geometry** domain. **Two weeks of practice items** have been selected for this domain. Because there is only three weeks, every standard may not be addressed.

The goal is for you to have a total of 10 weeks of practice items that represent the 5 domains in 8th grade. We would like for you to use these items for a 10 week period between the time you receive them and the end of January. If used daily for student and teacher practice, in accordance with our recommendations or tips, the outcome will be an improvement in ACT ASPIRE test scores.

At the end of each weekly packet, you will find an answer key for your use. **Although answer keys are provided, students should explain their thinking during the discussion of the practice item.**

A separate resource available to you is tasks addressing each of the domains. These tasks require students to think about an efficient strategy to solve the problem, show their work and justify their reasoning. This is the ultimate goal for what we want students to be able to do.

Recommendations or Tips:

When administering the practice items, please allow students to read through the daily items to see if they have any questions about vocabulary or what the problem is asking them to do prior to engagement. Taking the time to do these things now, will help to ensure that students are familiar with vocabulary and the different question types before the actual test.

Providing Feedback to Students:

Since the purpose of the test practice items is to assess student understanding, it is not enough just to give the practice items as bell ringers or engagement items. **A key part of the process for advancing student thinking, is to debrief the practice items and provide specific feedback on the student thinking and performance.** This can be done during the sharing out process by asking effective questions. It is difficult to make student thinking and understanding visible by just giving **multiple choice** questions and determining whether their response is correct or incorrect. Asking questions similar to the ones below can help students verbalize the reasoning for their choices:

- To get the correct solution, what concept do you have to be aware of?
- Why are the answer choices you did not choose incorrect?

- What strategy did you use to solve the problem? Why did you use that particular strategy?
- Is there another strategy that you could use to solve the problem?

The above questions can be used with **short response** and **constructed response** also. Other questions to consider when prompting students to verbalize or justify their thinking are:

Monitoring as students work:

- What is the problem asking you to find?
- How would you start the problem? How did you start the problem?
- What else do you need to do?

During debriefing:

- What did the problem ask you to do?
- What information do you see in the problem?
- What did you do first to solve this problem?
- Who else started this same way?
- What did you do next?
- Who started a different way?
- What are some strategies that you heard today that you would like to try when solving a similar problem in the future?

Answer Key:

The information above is intended to help teachers assess student understanding of the mathematical idea(s) in each problem. Also provided is an Answer Key for each set of items. While it is important for students to get the answer correct, **it is equally important for them to understand how their thinking leads or does not lead to a correct solution.** Incorrect solutions set the stage for teachable moments!!!!

Name _____

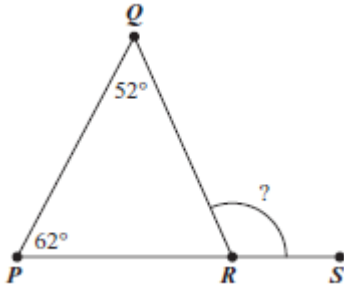
Date _____

Set 2 - Standard(s): 7.G.6, 8.G.1, 8.G.5

Massachusetts, Engage NY

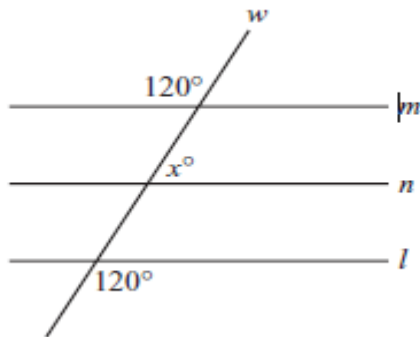
Day 1 Items

1. The diagram below shows triangle PQR , where $\angle QRS$ is an exterior angle.



Based on the given angle measures, what is the measure of $\angle QRS$?

- a. 57°
b. 66°
c. 114°
d. 118°
2. Lines m , n , and l are parallel. Line w intersects each line, as shown in the diagram below.



Based on the angle measures in the diagram, what is the value of x ?

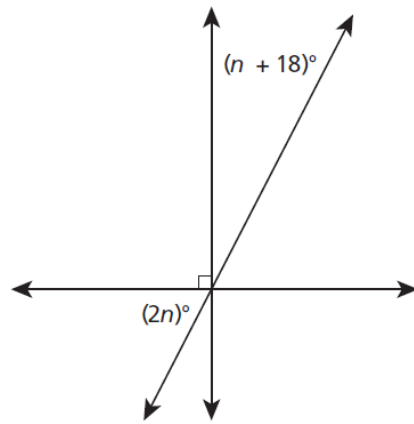
- a. 20°
b. 30°
c. 60°
d. 120°
- <http://www.doe.mass.edu/mcas/> - Massachusetts Department of Elementary and Secondary Education, Permission is hereby granted to copy for non-commercial educational purposes any or all parts of this document. Please credit the "Massachusetts Department of Elementary and Secondary Education."
 - <https://www.engageny.org/resource/new-york-state-common-core-sample-questions>, Engage NY

Set 2 - Standard(s): 7.G.6, 8.G.1, 8.G.5

Massachusetts, Engage NY

Day 1 Items

3. What is the value of n in the diagram below?



[not drawn to scale]

- a. 18
- b. 24
- c. 42
- d. 48

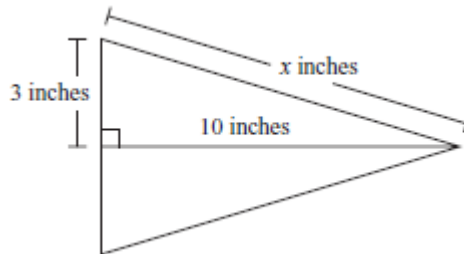
- <http://www.doe.mass.edu/mcas/> - Massachusetts Department of Elementary and Secondary Education, Permission is hereby granted to copy for non-commercial educational purposes any or all parts of this document. Please credit the "Massachusetts Department of Elementary and Secondary Education."
- <https://www.engageny.org/resource/new-york-state-common-core-sample-questions>, Engage NY

Set 2 - Standard(s): 8.G.6, 8.G.7, 8.G.8

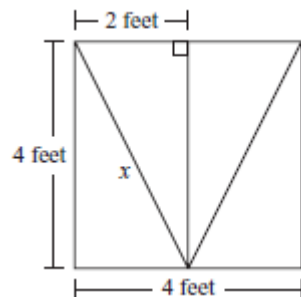
Massachusetts

Day 2 Items

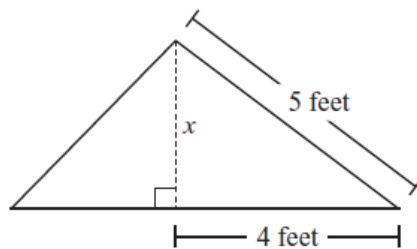
1. Dustin made a flag in the shape of a triangle, with the dimensions shown below. Which of the following is closest to the value of x ?



- a. 9.5
b. 10.4
c. 11.5
d. 13.0
2. A stained glass window is in the shape of a square. A sketch of the window, with some of its dimensions, is shown below. What is the length, to the nearest tenth of a foot, of the line segment labeled x ?



- a. 5.7 feet
b. 4.5 feet
c. 3.5 feet
d. 2.4 feet
3. A triangle and some of its dimensions are shown in the diagram below.



Based on the dimensions in the diagram, what is x , the height in feet of the triangle?

Name _____

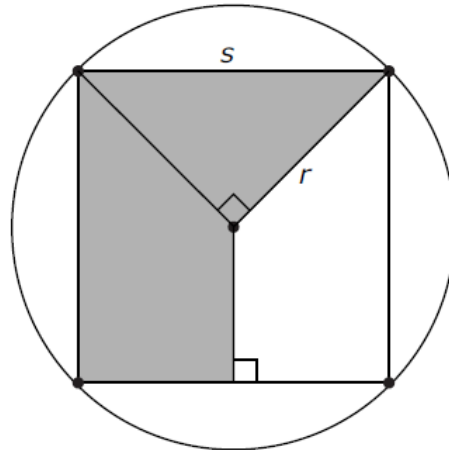
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Set 2 - Standard(s): 8.G.6, 8.G.7, 8.G.8

North Carolina, Massachusetts

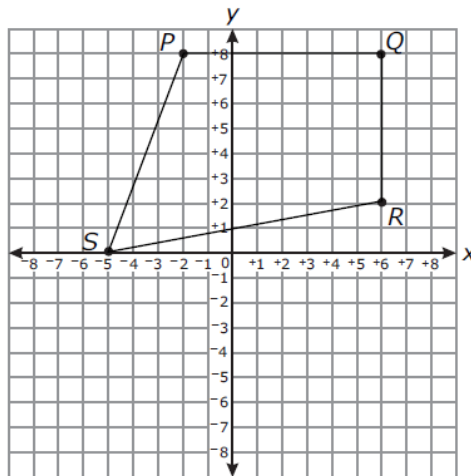
Day 3 Items

1. The figure below shows a square inscribed in a circle. The area of the shaded region is 2.5 square units.



What is the **approximate** area of the circle?

- a. 3.1 square units
 - b. 4.7 square units
 - c. 6.3 square units
 - d. 7.9 square units
2. Quadrilateral $PQRS$ is graphed in the coordinate plane.



To the nearest tenth, what is the perimeter of quadrilateral $PQRS$?

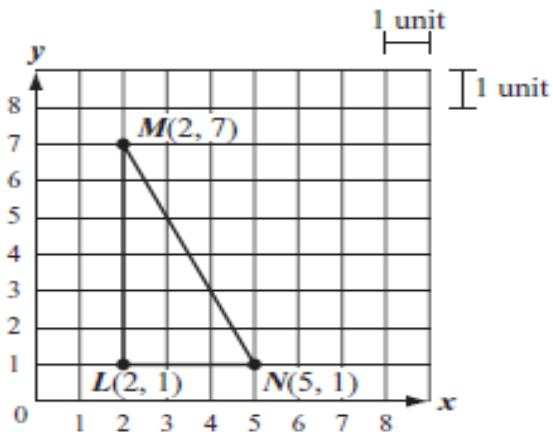
- a. 33.0 units
 - b. 33.7 units
 - c. 37.6 units
 - d. 48.0 units
- <http://www.ncpublicschools.org/docs/accountability/testing/releasedforms/g8mathpp.pdf>, North Carolina Department of Public Instruction
 - <http://www.doe.mass.edu/mcas/> - Massachusetts Department of Elementary and Secondary Education, Permission is hereby granted to copy for non-commercial educational purposes any or all parts of this document. Please credit the "Massachusetts Department of Elementary and Secondary Education."

Set 2 - Standard(s): 8.G.6, 8.G.7, 8.G.8

North Carolina, Massachusetts

Day 3 Items

3. Right triangle LMN is shown on the coordinate grid below.



Which of the following is the length, in units, of line segment MN ?

- a. 18^2
- b. $\sqrt{10}$
- c. 45^2
- d. $\sqrt{45}$

- <http://www.ncpublicschools.org/docs/accountability/testing/releasedforms/g8mathpp.pdf>, North Carolina Department of Public Instruction
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Name _____

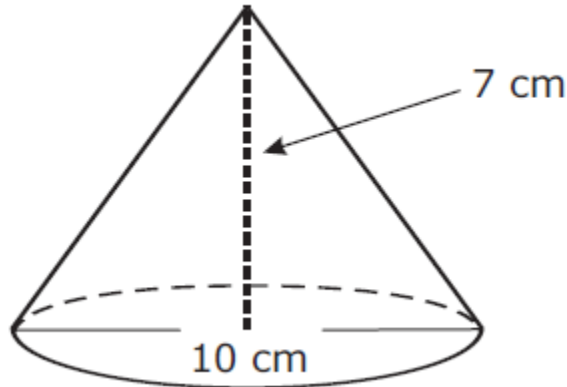
Date _____

Set 2- Standard(s): 7.G.6, 8.G.9

North Carolina, Engage NY, Massachusetts

Day 4 Items

1. What is the **approximate** volume of the cone below?



- a. 70 cm³
b. 183 cm³
c. 549 cm³
d. 733 cm³
2. A cylinder has a diameter of 14 centimeters and a volume 112π of cubic centimeters. What is the height, in centimeters, of the cylinder?
- a. 16
b. 4
c. $\frac{16}{7}$
d. $\frac{4}{7}$
3. A candy is in the shape of a sphere. The candy has a radius of 1.5 centimeters. Which of the following is closest to the volume of the candy? (Use 3.14 for π .)
- a. 113 cm³
b. 19 cm³
c. 14 cm³
d. 2 cm³

- <http://www.ncpublicschools.org/docs/accountability/testing/releasedforms/g8mathpp.pdf>, North Carolina Department of Public Instruction
- <https://www.engageny.org/resource/new-york-state-common-core-sample-questions>, Engage NY
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Name _____

Date _____

Set 2 - Standard(s): 7.G.6, 8.G.9

NAEP Questioning Tool, Massachusetts, North Carolina

Day 5 Items

1. What is the volume of a beach ball with a diameter of 14 inches?
 - a. 1,436.8 in³
 - b. 205.3 in³
 - c. 11,494.0 in³
 - d. 1,077.6 in³
2. The formula for the volume of a cone is shown in the box below.

$$V = \frac{\pi r^2 h}{3}$$

In the formula, r is the radius of the base of the cone and h is the height of the cone.

Which of the following is closest to the volume of a cone that has a height of 3.5 inches and a base with a diameter of 1.5 inches? (Use 3.14 for π .)

- a. 2 cubic inches
 - b. 5 cubic inches
 - c. 6 cubic inches
 - d. 8 cubic inches
3. A cylinder with a height of $6\frac{1}{2}$ inches and a diameter of 5 inches is shown. What is the volume of the cylinder, in cubic inches? (Use 3.14 for π .)

- NAEP Questioning Tool - <http://nces.ed.gov/nationsreportcard/nqt/>, SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2009 Mathematics Assessment.
- <http://www.doe.mass.edu/mcas/> - Massachusetts Department of Elementary and Secondary Education, Permission is hereby granted to copy for non-commercial educational purposes any or all parts of this document. Please credit the "Massachusetts Department of Elementary and Secondary Education."
- <http://www.ncpublicschools.org/docs/accountability/testing/releasedforms/g8mathpp.pdf>, North Carolina Department of Public Instruction

Set 2 - Standard(s): 7.G.6, 8.G.1, 8.G.5

Massachusetts, Engage NY

Day 1 Items - KEY

1. C
2. C
3. B

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- <https://www.engageny.org/resource/new-york-state-common-core-sample-questions>, Engage NY

Set 2 - Standard(s): 8.G.6, 8.G.7, 8.G.8

Massachusetts

Day 2 Items - KEY

1. B
2. B
3. 3 feet

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Set 2 - Standard(s): 8.G.6, 8.G.7, 8.G.8

North Carolina, Massachusetts

Day 3 Items - KEY

1. C
2. B
3. D

- <http://www.ncpublicschools.org/docs/accountability/testing/releasedforms/g8mathpp.pdf>, North Carolina Department of Public Instruction
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Set 2 - Standard(s): 7.G.6, 8.G.9

North Carolina, Engage NY, Massachusetts

Day 4 Items - KEY

1. B
2. C
3. C

- <http://www.ncpublicschools.org/docs/accountability/testing/releasedforms/g8mathpp.pdf>, North Carolina Department of Public Instruction
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Set 2 - Standard(s): 7.G.6, 8.G.9

NAEP Questioning Tool, Massachusetts, North Carolina

Day 5 Items - KEY

1. A
 2. A
 3. 127.5625 in^3
- NAEP Questioning Tool - <http://nces.ed.gov/nationsreportcard/nqt/>, SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2009 Mathematics Assessment.
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