

Mathematics Class Slides  
Bronx Early College Academy

Christopher J. Huson PhD

4 October 2021

2.1 Area and volume formulas, 4 October

2.2 Area and volume formulas, 5 October

2.3 Area and volume formulas, 6 October

2.4 Perimeter, 7 October

2.5 Volume formulas, 8 October

2.6 Solve for a missing length, 12 October

2.7 Pretest Circles and Volume, 13 October

2.8 Pretest Circles and Volume, 14 October

414 Seating chart 10.1

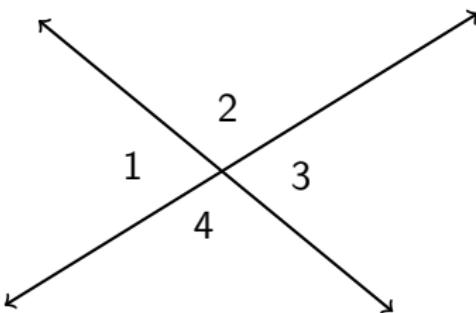
420 Seating chart 10.3

# Learning Target: I can calculate area

7.G.B.6 Solve problems involving area, volume and surface area 2.1 Monday 4 October

Do Now: Identify the true statements

1.  $\angle 1 \cong \angle 2$
2.  $\angle 2 \cong \angle 4$
3.  $m\angle 1 + m\angle 4 = 180^\circ$
4.  $m\angle 2 + m\angle 3 = 90^\circ$



Lesson: Test scoring, mastery; Area formulas

Homework: Test corrections due Friday

# Learning Target: I can calculate area

7.G.B.6 Solve problems involving area, volume and surface area

Copy these formulas into your notes

1. Rectangle:  $A = l \times w$  (Area equals length times width)
2. Square:  $A = s^2$  (Area equals side length squared)
3. Triangle:  $A = \frac{1}{2}b \times h$  (one half base times height)
4. Trapezoid:  $A = \frac{1}{2}(b_1 + b_2)h$  (Average of bases times height)
5. Circle:  $A = \pi r^2$  (pi times radius squared)

## Quiz learning targets

1.13 Angles test October 1st

### Four mastery standards

- ▶ Solve problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals). (7.EE.B.3)
- ▶ Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure. (7.G.B.5)
- ▶ Solve linear equations with rational number coefficients, including using the distributive property and collecting like terms. (8.EE.C.7.b)
- ▶ Use geometric shapes, their measures, and their properties to describe objects. (GEO-G.MG.1)

## Quiz scoring

1.13 Angles test October 1st

### Four mastery scores 1-4

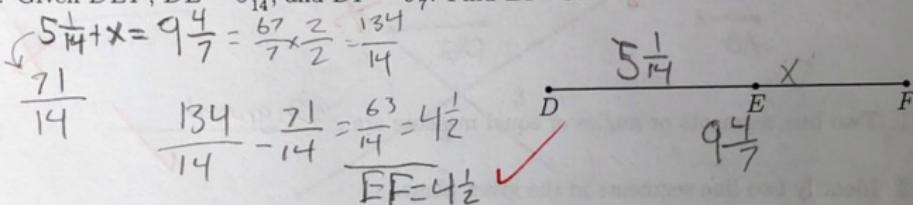
1. Left blank or barely attempted
2. Many answers, often erroneous
3. Consistently correct
4. Uniformly correct and efficient

## Quiz mastery standards

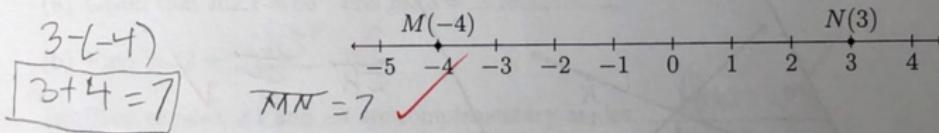
### Mastery standards

Solve problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals). (7.EE.B.3)

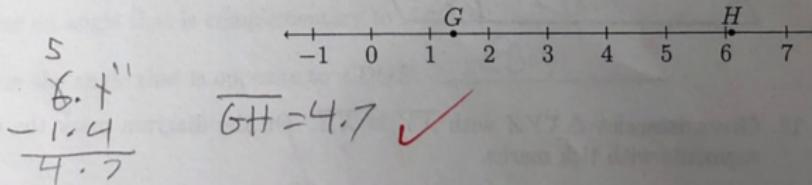
4. Given  $\overline{DEF}$ ,  $DE = 5\frac{1}{14}$ , and  $DF = 9\frac{4}{7}$ . Find  $EF$ . State as a fraction.



5. Find the distance between  $M$  and  $N$ .



6. Find  $GH$ , given  $G = 1.4$  and  $H = 6.1$ .



## Quiz mastery standards

Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure. (7.G.B.5)

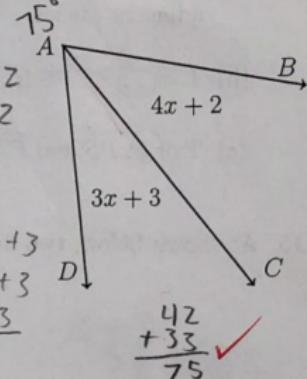
Solve linear equations with rational number coefficients, including using the distributive property and collecting like terms.

(8.EE.C.7.b)

17. Given  $m\angle BAC = 4x + 2$  and  $m\angle CAD = 3x + 3$ ,  $m\angle BAD = 75^\circ$ . Find  $m\angle BAC$ .

$$\begin{aligned}
 & (4x+2) + (3x+3) + 75 \\
 & \quad -3 \qquad \qquad \qquad -3 \\
 & \quad 4x+2 + 3x + 72 \\
 & \quad -2 \qquad \qquad \qquad -2 \\
 & \quad 4x + 3x = 70
 \end{aligned}$$

$$\begin{aligned}
 & m\angle BAC = 4(10) + 2 \\
 & \quad 40 + 2 \\
 & \quad \underline{\quad 42 \quad}
 \end{aligned}$$



$$\boxed{m\angle BAC = 42}$$

$$\begin{aligned}
 & 7x = 70 \\
 & \underline{x = 10}
 \end{aligned}$$

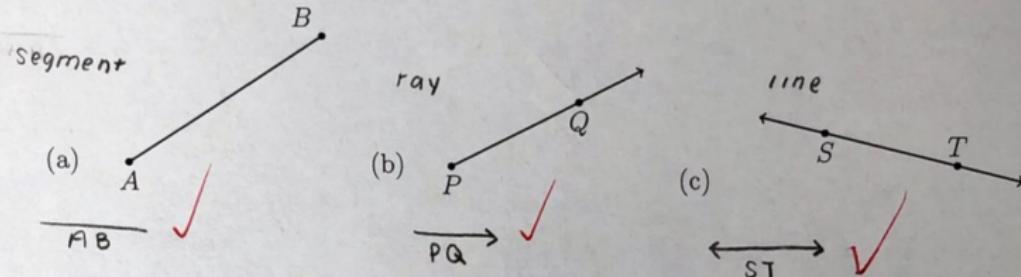
$$\underline{\quad 33 \quad}$$

$$\begin{aligned}
 & 42 \\
 & + 33 \\
 & \hline 75
 \end{aligned}$$

## Quiz mastery standards

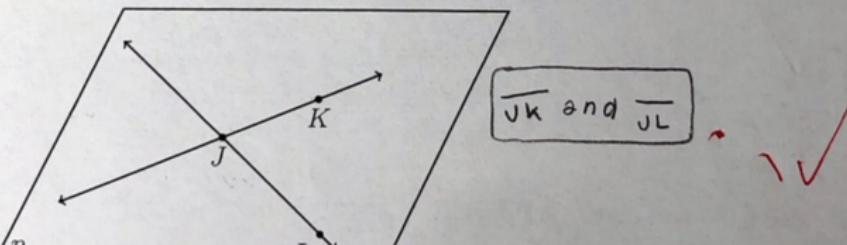
Use geometric shapes, their measures, and their properties to describe objects. (GEO-G.MG.1)

10. Use conventional notation to write the names of the ray, line, and segment shown.



11. Two line segments or angles of equal measure are congruent.

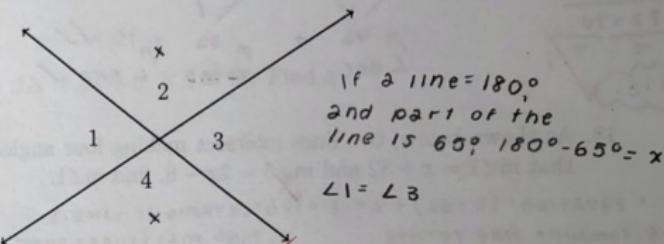
12. Identify two line segments in the given plane.



## Quiz mastery standards

Use geometric shapes, their measures, and their properties to describe objects. (GEO-G.MG.1)

15. As shown below, two lines intersect making four angles:  $\angle 1$ ,  $\angle 2$ ,  $\angle 3$ , and  $\angle 4$ .



(a) Given that  $m\angle 1 = 65^\circ$ , find  $m\angle 3 = \underline{65^\circ}$

(b) Find  $m\angle 2 = \underline{115^\circ}$

(c) True or false,  $\angle 1$  and  $\angle 4$  are complementary angles. false, (complementary = 90°!)

16. (a) Given, the diagram below. Name a right angle:  $\angle COD$

(b) Name an angle that is complementary to  $\angle AOB$ :  $\angle BOC$

(c) Name the angle that is opposite to  $\angle DOE$ :  $\angle BOD$

# Learning Target: I can calculate areas

7.G.B.6 Solve problems involving area, volume and surface area 2.2 Tuesday 5 October

Do Now: Identify the true statements.

Given  $\angle AOB = 2x$  and  $\angle BOC = 5x + 20$ .

1.  $\angle AOB \cong \angle BOC$

$$2x = (5x + 20)$$

2.  $\angle AOB, \angle BOC$  are

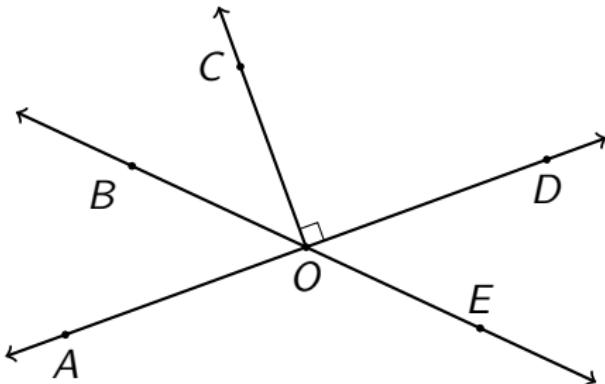
complementary

$$2x + (5x + 20) = 90^\circ$$

3.  $\angle AOB$  and  $\angle BOC$  are a

linear pair

$$2x + (5x + 20) = 180^\circ$$



Copy the correct equation and solve for  $x$ . Check your answer.

Lesson: Compound area situations

# Learning Target: I can calculate areas

7.G.B.6 Solve problems involving area, volume and surface area **2.3 Wednesday 6 October**

**Do Now:** Identify the true statements.

Ray  $\overrightarrow{KM}$  bisects  $\angle JKL$ .  $m\angle JKM = 4x - 20$ ,  $m\angle MKL = 3x + 4$ .

1.  $\angle JKM$  and  $\angle MKL$  are a

linear pair

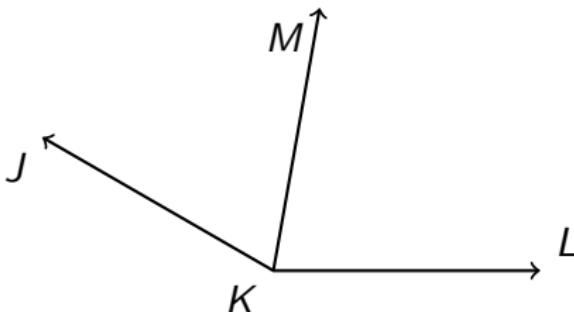
$$(4x - 20) + (3x + 4) = 180^\circ$$

2.  $\angle JKM$ ,  $\angle MKL$  are adjacent and

$$4x - 20 = 90^\circ$$

3.  $\angle JKM \cong \angle MKL$

$$4x - 20 = 3x + 4$$



Copy the correct equation and solve for  $x$ . Check your answer.

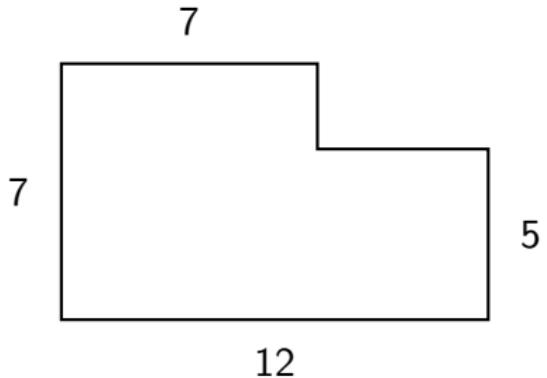
Lesson: Compound area situations

## Learning Target: I can calculate areas

7.G.B.6 Solve problems involving area, volume and surface area **2.4 Thursday 7 October**

Do Now: Find the area of the shape with lengths marked

All angles are  $90^\circ$ . (not drawn to scale)



Lesson: Perimeter

Exit quiz: Use angle facts to write equations, solve linear equations

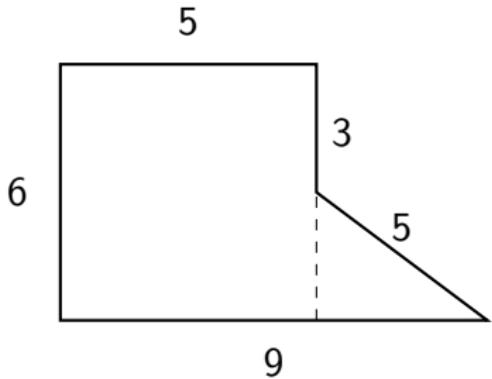
# Learning Target: I can calculate volume

7.G.B.6 Solve problems involving area, volume and surface area

2.5 Friday 7 October

Do Now: Find the area and perimeter of the shape

Angles that appear to be square are  $90^\circ$ . (not drawn to scale)



Lesson: Volume

Review yesterday's quiz: Use angle facts to write equations, solve linear equations

# Learning Target: I can calculate volume

7.G.B.6 Solve problems involving area, volume and surface area

Copy these formulas into your notes

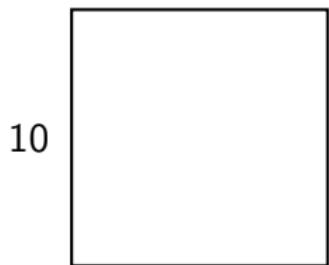
1. Rectangular prism (box):  $V = l \times w \times h$   
(Volume equals length times width times height)
2. Cube:  $V = s^3$  (Area equals side length cubed)
3. Pyramid:  $V = \frac{1}{3}B \times h$  (where  $B$  is the area of the base)
4. Cone:  $V = \frac{1}{3}(\pi r^2)h$
5. Sphere:  $V = \frac{4}{3}\pi r^3$

## Learning Target: I can solve for a missing length

7.G.B.6 Solve problems involving area, volume and surface area **2.6 Tuesday 12 October**

Do Now: Find the area and perimeter of the square

10

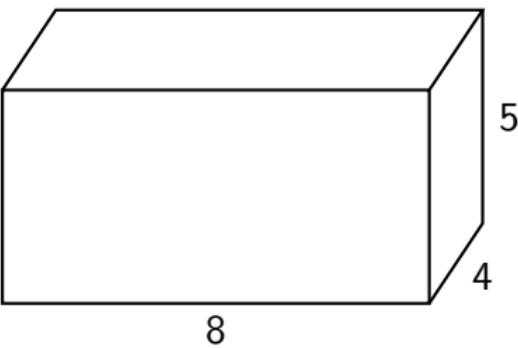


Lesson: Solving for a missing length given other parameters

## Learning Target: I can find area, perimeter, and volume

7.G.B.6 Solve problems involving area, volume and surface area      2.7 Wednesday 13  
October

Do Now: Find the volume of a rectangular prism with length 8 cm, width 4 cm, and height 5 cm. Show the calculation.



Lesson: Review of area, perimeter, and volume. **Test Friday**

## Test scoring - Area, perimeter, volume

Mastery grades 1 to 4

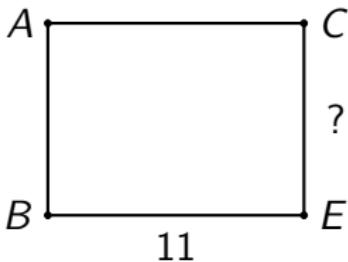
Self assessment: How are you doing?

1. Well below: Few or no problems completely correct. Many blank. No calculator.
2. Approaching expectations: Several correct problems, but use of formulas and algebra spotty. Rounding errors. May have a graphing calculator, or at least be proficient with middle school calculator.
3. Proficient: Works most problems and solves the majority. Notation is clear and efficient. Solves for missing lengths using algebra.
4. Extending: Consistently correct and efficiently communicated. Readily employs algebra to solve problems. Is practiced with a personal graphing calculator.

# Learning Target: I can find area, perimeter, and volume

7.G.B.6 Solve problems involving area, volume and surface area **2.8 Thursday 14 October**

Do Now: The rectangle  $BECA$  has an area of 77, with length  $BE = 11$ . Write an equation with the unknown  $w$  as the width of the rectangle,  $CE$ . Solve.



Lesson: Review of area, perimeter, and volume. **Test tomorrow, worksheets due**

## Notebook credit

Mastery grades 1 to 4

Take organized notes and study them for the test Friday

1. Well below: Few notes or no notebook
2. Approaching expectations: Many pages of notes in a composition book. Missing several formulas and definitions.
3. Proficient: Well organized composition book with most or all formulas and terminology easy to locate.
4. Extending: Assesses peers and gives constructive feedback.

Notebook leaders:

10.1 Jada, Abigail, Aiden, Nathaliah

10.2 Jakia, Favour, Khudija

10.3 Flora, Jefferson, Catalina

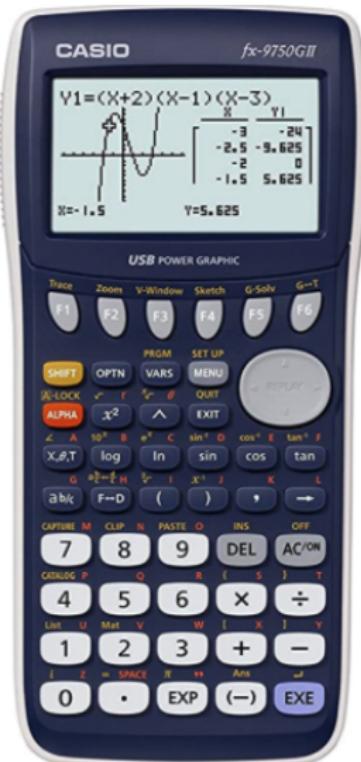
## Casio fx-9750GII calculator - due Friday 1 October

In the high school at BECA we use the Casio fx-9750GII.

It is allowed on the Regents exams, SAT tests, and International Baccalaureate exams.

You may use a different calculator in Geometry if you prefer, but I recommend buying the Casio fx-9750GII.

(see me if buying a calculator is a hardship for your family)



## Learning Target: I can use technology

CCSS: MP4 use technology strategically

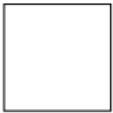
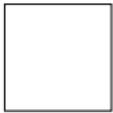
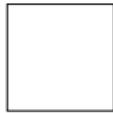
### Self assessment: Technology

- |  |     |    |
|--|-----|----|
| 1. I have my own calculator with me today.   | Yes | No |
| 2. I have a notebook, ruler, and protractor. | Yes | No |

## Open Middle problem (fun)

Use digits from 0 to 9. Using a digit no more than once.

The first two angle measures are complementary. The second two angles supplementary. (degrees)



## Quiz learning targets

7.G.B.6 Solve problems involving area, volume and surface area

### Four mastery standards

- ▶ Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. For example: If a woman making \$25 an hour gets a 10% raise, she will make an additional  $1/10$  of her salary an hour, or \$2.50, for a new salary of \$27.50. If you want to place a towel bar  $9 \frac{3}{4}$  inches long in the center of a door that is  $27 \frac{1}{2}$  inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.  
(7.EE.B.3)
- ▶ Use facts about supplementary, complementary, vertical, and