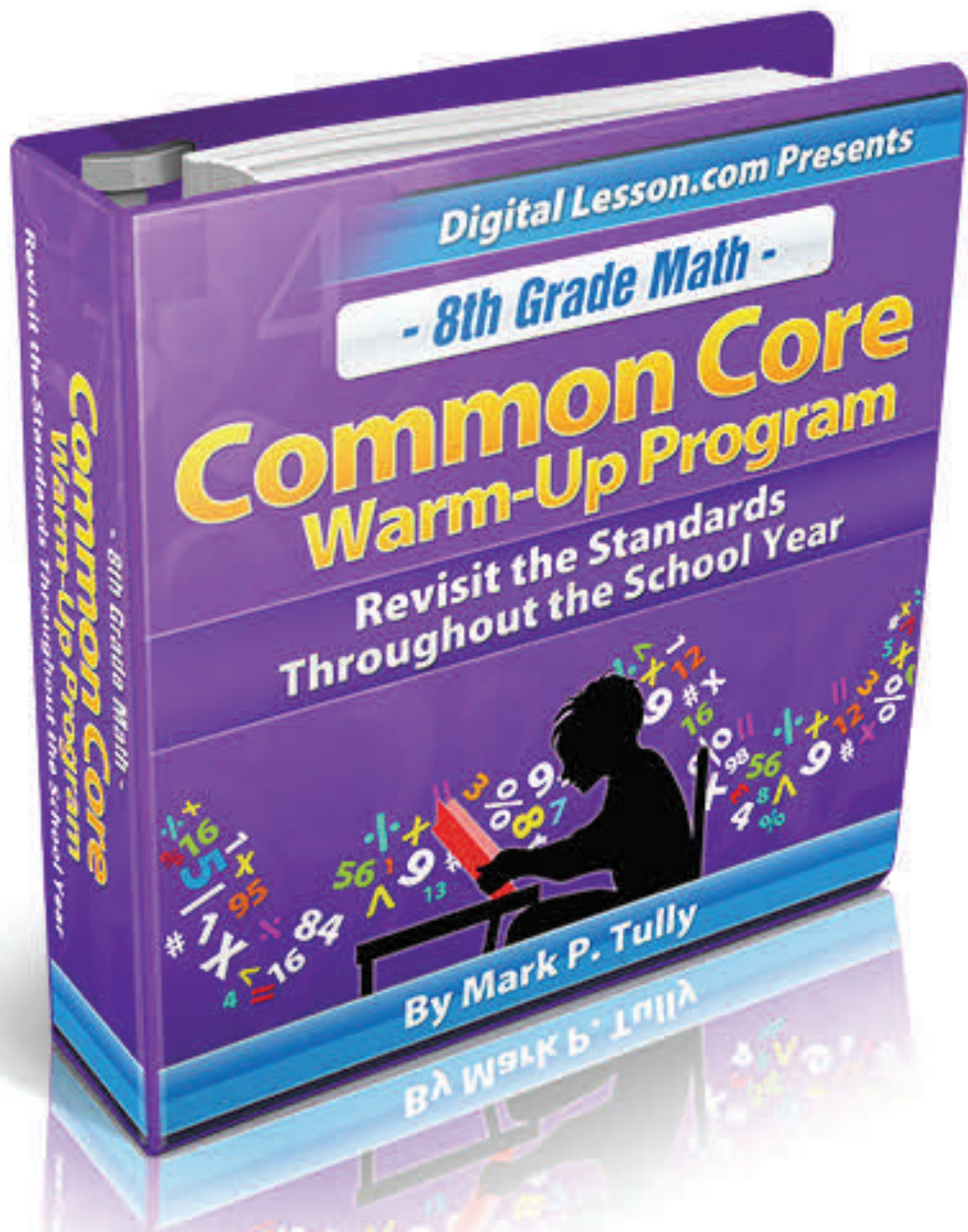


# 8th Grade Math

## Common Core Warm-Up Program

### Preview Pages

These preview pages include full teacher introduction, implementation suggestions, Common Core Standards correlation sample pages, and 11 Warm-Up pages from the 8th grade program.

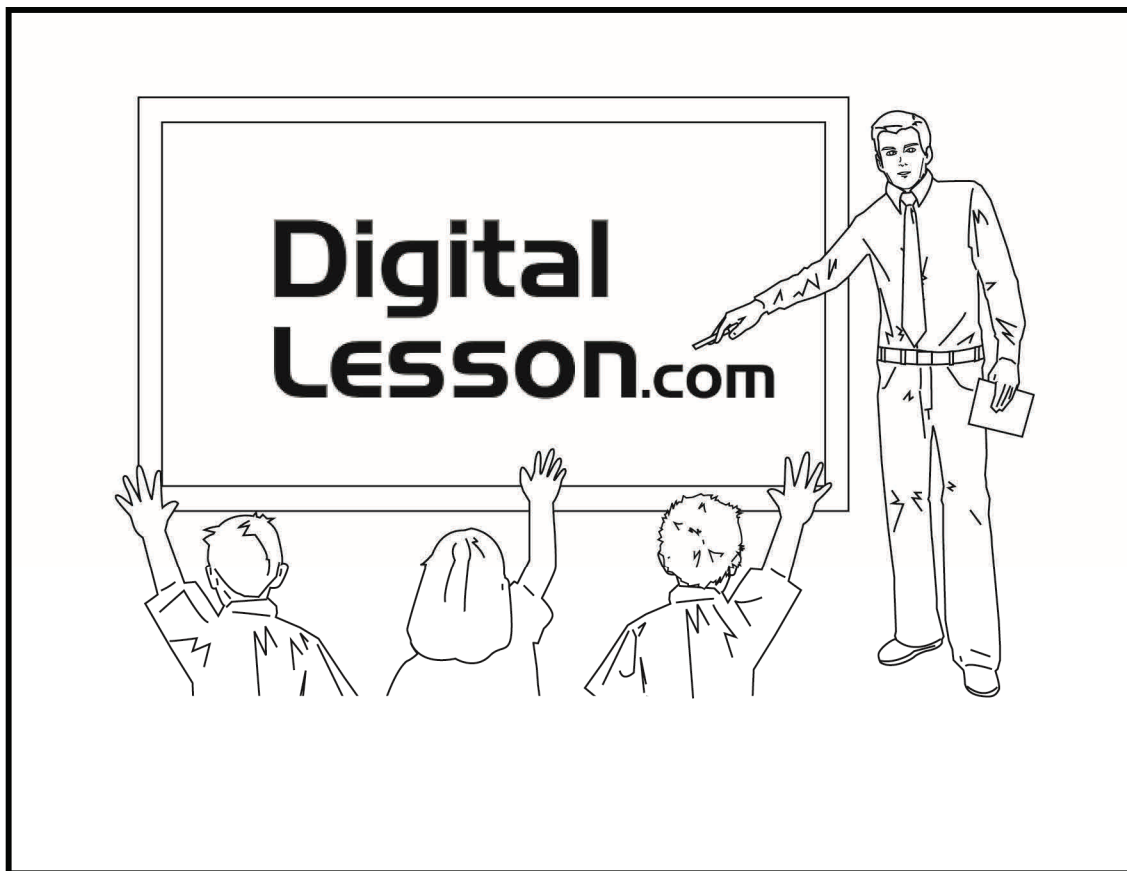


Mark P. Tully

8th Grade Math

# Common Core

## Warm-Up Program



120 Warm-Ups to Begin Your Math Class

Revisit the Standards Throughout the School Year

Reinforce Learning through Repetition

Sharpen Student Skills to Facilitate Problem Solving

# 8th Grade Math Common Core Warm-Up Program

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Thank you,

Mark Tully

Founder, DigitalLesson.com

Mark Tully is a mathematics teacher at Oak Middle School in the Los Alamitos Unified School District, Los Alamitos, California. He has been teaching for more than 25 years and during that time has served as Mathematics Department Chairman and as a Mathematics Mentor Teacher. He enjoys developing activities that are designed to present the prescribed mathematics curriculum and standards in a way that is active and engaging.

Mark's website, [www.DigitalLesson.com](http://www.DigitalLesson.com), is designed to meet the needs of middle school math teachers. DigitalLesson.com specializes in providing instant downloads of engaging, hands-on math activities. These middle school math activities are designed to enhance the middle school math program. Also included on the site are other math resources tailored for the middle school math teacher.

Mark also publishes the *Middle School Math Treasures* newsletter. The newsletter includes resources, ideas, and activities for middle school math teachers. A subscription to *Middle School Math Treasures* is free! Sign up on the home page of DigitalLesson.com. Unsubscribe at any time. We will never rent or sell your e-mail address. Enjoy this great, free resource!

We would love to hear about your experiences using this book, [8th Grade Math Common Core Warm-Up Program](#) in your classroom. Please e-mail us with any comments at [mark@digitallesson.com](mailto:mark@digitallesson.com).

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# 8th Grade Math Common Core Warm-Up Program

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# 8th Grade Math Common Core Warm-Up Program

## Teacher Introduction (p. 1)

### Why a Math Warm-Up Program?

I have used several math warm-up programs in my classroom over the past few years and I believe that **they have played a significant role in the achievement of my math students**. I'll get into more detail below, but here is a list of the key benefits that I have experienced when using a warm-up program:

- \* warm-ups set the tone for a productive math class period
- \* warm-ups give me the opportunity to quickly pre-teach or review important math concepts
- \* warm-ups create multiple opportunities for students to learn each concept throughout the year
- \* warm-ups can increase student performance on mathematical tasks and tests that have math skills as their foundation

**Repetition and experience are keys to learning.** Think of the strong mathematical foundation that your students will build as they continuously review key 8th grade concepts in this Common Core Warm-Up Program.

### Setting the Tone for a Productive Math Class Period

When my students enter my classroom they find 5 warm-up problems projected on the screen at the front of the classroom. I have trained my students to quiet down when the bell rings, copy down their homework assignment, and then begin their warm-up problems. This calming, systematic start to each day becomes familiar to students and maximizes effective instructional time in the classroom.

### Repeated Opportunities for Students to Learn

A few years ago I was involved in a discussion with my principal about how we could improve student performance in math. I told her that to me this was NOT a mystery. **If students were given the opportunity to practice the key skills in their grade level a number of times during the school year, their retention and ability to use these concepts would dramatically increase.** My principal then informed me that we had purchased a set of warm-ups that would help us accomplish our goal.

Too often (before I used warm-ups) students were taught a linear progression of grade level skills during the year and then we held a multi-day “cram session” where we reviewed the most important skills again before our end of the year assessments. This method proved to be **not nearly as effective as regular warm-up problems**. Regular warm-up problems often expose students to the key grade level concepts 5-10 times (or more) during the course of the school year. The results of this consistent program of review were noteworthy.

# 8th Grade Math Common Core Warm-Up Program

## Teacher Introduction (p. 2)

### The Results of Using Daily Warm-Ups in the Math Classroom

The year that we purchased the warm-up program we were only able to complete 50-60 of the daily warm-ups because we started a few months into the school year. Still, our 7th grade math state test results showed the biggest increase out of any subject and grade level in our school. While my conclusion is based solely on observation (and I know that there are other factors involved) my colleagues and I are certain that **repeated exposures to the key content standards** in 7th grade **made a significant difference** in our results.

The following year our 6th grade team (I teach both grade levels) created our own set of warm-ups because a commercial product like the one we used in 7th grade was not available to us. We experienced similar results of significant improvement by our 6th grade students on the state mathematics test that year.

To me it is simply common sense that students will better understand the key grade level standards when they are given **multiple opportunities to learn each concept throughout the school year**.

### The Common Core State Standards for 8th Grade Math

With the vast majority of states having adopted the Common Core State Standards for Mathematics, how will skill-based warm-ups fit in with these new standards? I believe that students will always need a strong skill set in order to approach the problem solving tasks and activities that are part of the Common Core.

Based on my experiences as a teacher for over 25 years, **I have developed this 8th Grade Math Common Core Warm-Up Program to both implement and help support the Common Core State Standards.**

Each of the 120 warm-up pages in this book has 5 problems aligned with the Common Core State Standards for 8th grade math. It is **my goal that this warm-up program will help propel your 8th grade math students to success in math** this year and for years to come.

### Implementing this Warm-Up Program in Your Classroom

In the **pages that follow** I will give you a step-by-step description of how I implement a warm-up program in my classroom. As always, these are ideas and suggestions based on my experience. **As a math teacher you should absolutely modify any procedures so that they work most effectively for you and your classroom.**

# 8th Grade Math Common Core Warm-Up Program

## Implementing the Program in Your Classroom (p. 1)

### 1) Students Complete the Five Daily Warm-Up Problems (5-8 minutes)

When students enter the classroom they see a warm-up projected on the front screen. They complete the problems to the best of their ability, **showing their work on the warm-up recording sheet provided with this program**. After 5-8 minutes we review the answers, even if not every student has finished. Students **number the problems** and **show either work or the original problem** on their recording sheet.

### 2) Checking the Warm-Up Problems (2-4 minutes)

#### Student Participation

When I review the answers to the warm-ups I keep track of who answers each question by putting a tally mark on my seating chart. That way I ensure that everyone participates in this activity over the course of time. I call on a student and ask that student to share their answer and then, if appropriate, explain how they solved the problem. Some problems are straight computation and do not require an explanation.

#### Distributing Tickets

As an incentive for answering questions I select a student and give them 6 tickets to distribute. Five are for the students that correctly answer and explain the warm-up problems and 1 is to be kept by the student who distributes the tickets. Students receiving a ticket (from a basic roll of tickets that I purchase from Staples) put their name on the back and place the ticket in a class-specific can at the back of the classroom. Every 3-4 weeks I hold ticket drawings where I select 10-20 tickets and give away treats, school passes, homework passes, and any other prizes that I can get my hands on. I mention this at Back-to-School Night and parents will often donate items for our ticket drawings.

#### Teaching Mini Lessons

As we review the math problems I often teach small mini-lessons. We discuss any problems that are previews of lessons that have not yet been taught as well as those problems that review or apply previously covered concepts. I realize that these short explanations will not be grasped by every student. However, a number of students will better understand after the explanation and will be more prepared for similar problems in the future. Remember, this warm-up program is not taught for immediate mastery of every concept. Rather, multiple exposures to the mathematics will help lead students to mastery.

#### Answer Key Abbreviations Due to Limited Space

\* Some words are abbreviated due to space limitations on the answer key.



# 8th Grade Math Common Core Warm-Up Program

## Implementing the Program in Your Classroom (p. 2)

### 3) Warm-Up Corrections

Students do the warm-up problems in pencil and correct them in colored pencil or ink on their Student Warm-Up Recording Sheet. They show work for each problem and place the answers in the answer column.

As we correct and discuss the problems students are instructed to show corrections (in color) next to each problem that they have missed. In my class, a correction is not just copying the correct answer in color next to their incorrect answer in the answer column. I require that students actually show the work (calculations, drawings, explanations, etc.) for any missed problems next to their original work.

### 4) Grading Warm-Ups

At the end of each five-day warm-up period I collect the students' recording sheets. In giving the students credit for their work and assigning a grade I am less concerned with their actual score and more concerned with student learning. With this in mind I consider three things before assigning a grade.

First, I check to make sure that students have shown some kind of work on every problem. On simple problems this may just be writing the problem down. On other problems this may mean showing the calculations involved in determining an answer.

Secondly, I monitor student corrections. As mentioned above, I require students to correct (in color) each and every problem that they miss. This is their opportunity for learning. As such, students who do not complete their corrections do not receive full credit. Corrections should include the work associated with arriving at the correct answer, not simply copying down the right answer when it is read aloud in class.

Thirdly, I look at the neatness and completeness of the paper. There are places on the recording sheet for the day, date, warm-up number, score, work, answers, and heading. If the paper is not filled out completely then the student will not receive full credit.

I count warm-ups as part of the homework grade in my classroom. Once again, I want to re-emphasize the point that I am more concerned with student learning during the warm-up process than I am with how many problems they get correct each day. If students miss problems but learn from their mistakes (and show their corrections) they can still receive full credit on the assignment.

Sometimes I use exceptional Student Warm-Up Recording Sheets as examples to help students understand the kind of work that I expect.

Finally, do not be overwhelmed by the prospect of grading several class sets of warm-ups. I quickly scan a paper for work, corrections, and completeness. I also notice how many problems they answered correctly out of the total. I can usually grade a class set of 35 papers in about 10 minutes.

# 8th Grade Math Common Core Warm-Up Program

## Implementing the Program in Your Classroom (p. 3)

### Additional Tips for Implementation

Navigation - There are **two main ways to navigate to the warm-up page that you will be using on a given day**. One option is to use the **bookmarks function** on this pdf file. Just click on the link for a given warm-up to be directed to that page. The second option is to simply **add 23 to the scheduled warm-up number** to find the correct page in this eBook. For example, to access Warm-up # 50 go to page 73.

Absences - Absent students are instructed to write “absent” on their recording sheet for any days that they miss school. No makeups are given on warm-ups.

Show Work - Work is required to be shown on all problems. For those problems that can be solved mentally, students should, at a minimum, write down the problem given.

Projection Tips - The warm-ups can be projected onto a screen directly from the pdf using a projector or by using physical copies of the warm-ups and a document camera. To keep the projection large enough it may be necessary to scroll down the page or slide the physical copy beneath the document camera. In such cases instruct students to complete the top two problems (problems #1 and #4) because they will not be visible if the warm-up needs to be repositioned.

No Calculators - This warm-up program is designed to be done without calculators. Required calculations are within the reasonable ability range for the students.

Encourage Drawings - Certain types of problems (coordinate plane problems, etc.) can best be solved by quickly sketching or drawing a picture to help find the answer. Encourage drawing as a strategy.

Time Period - The warm-ups and their work are completed on a recording sheet that has room for 5 warm-ups. Although I am very consistent in using warm-ups, I do not give warm-ups every single day. Sometimes there is a test or other assignment that requires the entire class period and so no warm-up is given on that day. Do not feel that warm-ups need to start on a Monday and end on a Friday. I start a new warm-up sheet when needed whether that is on a Monday or any other day of the week.

New Problem Types - As mentioned previously, I do not expect students to answer every problem correctly, especially when new concepts are introduced. I briefly explain the new concept and move on. Some students will understand the first time and others will understand with further repetition.

120 Warm-ups - I have rarely finished 120 warm-ups in one school year even though our school year has about 180 days. The reasons for this include days without warm-ups (tests, projects, assemblies, etc.) as well as days at the beginning and end of the school year where I do not use warm-ups because we are either in intro mode or windup mode. In addition, I like to mix in other starter activities every now and then. If you do end up needing more than 120 warm-ups my suggestion would be to cycle back around and choose some of the warm-ups to rework. Your students will not have these problems memorized and so they will continue to provide an effective review of 8th grade math concepts.

Math 8

LAST, FIRST

Warm-Ups

**(Sample Page)**

MATH, PERIOD 2

Common Core Review

10/12/18

MONDAY

10/12

Warm-Up # 26

4 / 5

1) 53

2) \$12.45

1) Show work 2) Show work 3) Show work 4) Show work 5) Show work

3) 32 IN.<sup>2</sup>

or problem

or problem

or problem

or problem

or problem

4)  $X \geq 5$

5) 3,284

Warm-Up # \_\_\_\_\_ / 5

**(REMEMBER TO CORRECT ALL MISSED PROBLEMS IN COLOR.)**

1) \_\_\_\_\_

2) \_\_\_\_\_

3) \_\_\_\_\_

4) \_\_\_\_\_

5) \_\_\_\_\_

Warm-Up # \_\_\_\_\_ / 5

**(NUMBER YOUR WORK)**

1) \_\_\_\_\_

2) \_\_\_\_\_

3) \_\_\_\_\_

4) \_\_\_\_\_

5) \_\_\_\_\_

Warm-Up # \_\_\_\_\_ / 5

1) \_\_\_\_\_

2) \_\_\_\_\_

3) \_\_\_\_\_

4) \_\_\_\_\_

5) \_\_\_\_\_

Warm-Up # \_\_\_\_\_ / 5

1) \_\_\_\_\_

2) \_\_\_\_\_

3) \_\_\_\_\_

4) \_\_\_\_\_

5) \_\_\_\_\_

Warm-Up Page Score 22 / 25

Math 8

Warm-Ups

Common Core Review

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_ Warm-Up # \_\_\_\_\_ / 5 1) \_\_\_\_\_  
2) \_\_\_\_\_  
3) \_\_\_\_\_  
4) \_\_\_\_\_  
5) \_\_\_\_\_

\_\_\_\_\_ Warm-Up # \_\_\_\_\_ / 5 1) \_\_\_\_\_  
2) \_\_\_\_\_  
3) \_\_\_\_\_  
4) \_\_\_\_\_  
5) \_\_\_\_\_

\_\_\_\_\_ Warm-Up # \_\_\_\_\_ / 5 1) \_\_\_\_\_  
2) \_\_\_\_\_  
3) \_\_\_\_\_  
4) \_\_\_\_\_  
5) \_\_\_\_\_

\_\_\_\_\_ Warm-Up # \_\_\_\_\_ / 5 1) \_\_\_\_\_  
2) \_\_\_\_\_  
3) \_\_\_\_\_  
4) \_\_\_\_\_  
5) \_\_\_\_\_

\_\_\_\_\_ Warm-Up # \_\_\_\_\_ / 5 1) \_\_\_\_\_  
2) \_\_\_\_\_  
3) \_\_\_\_\_  
4) \_\_\_\_\_  
5) \_\_\_\_\_

Warm-Up Page Score \_\_\_\_\_ / \_\_\_\_\_

# 8th Grade Math Common Core Warm-Up Program

## Common Core State Standards Correlation by Warm-Up (1-56)

- 1) 8.EE.1, 8.NS.1, 8.G.2, 8.F.1, 8.SP.1
- 2) 8.NS.1, 8.EE.2, 8.EE.4, 8.G.2, 8.F.1
- 3) 8.EE.3, 8.NS.2, 8.F.1, 8.G.1a, 8.EE.5
- 4) 8.EE.1, 8.NS.1, 8.EE.4, 8.F.1, 8.G.5
- 5) 8.EE.1, 8.NS.2, 8.SP.1, 8.G.2, 8.EE.6
- 6) 8.NS.1, 8.EE.1, 8.EE.3, 8.G.1b, 8.F.2
- 7) 8.NS.1, 8.EE.3, 8.G.6, 8.G.2, 8.EE.6
- 8) 8.EE.1, 8.NS.1, 8.EE.7a, 8.G.2, 8.SP.1
- 9) 8.EE.1, 8.EE.2, 8.NS.2, 8.F.3, 8.G.5
- 10) 8.EE.1, 8.NS.1, 8.EE.7b, 8.G.1a, 8.F.2
- 11) 8.EE.1, 8.NS.2, 8.EE.7a, 8.G.1c, 8.EE.5
- 12) 8.NS.1, 8.EE.4, 8.F.1, 8.G.5, 8.EE.6
- 13) 8.EE.1, 8.NS.1, 8.EE.7b, 8.G.2, 8.F.2
- 14) 8.NS.2, 8.EE.2, 8.EE.7a, 8.F.2, 8.F.1
- 15) 8.EE.1, 8.NS.2, 8.EE.4, 8.F.3, 8.G.5
- 16) 8.NS.1, 8.EE.2, 8.SP.1, 8.G.4, 8.EE.5
- 17) 8.EE.2, 8.EE.1, 8.NS.1, 8.F.1, 8.SP.1
- 18) 8.EE.1, 8.EE.4, 8.NS.2, 8.F.1, 8.EE.3
- 19) 8.EE.3, 8.NS.1, 8.EE.7a, 8.G.5, 8.EE.6
- 20) 8.EE.1, 8.EE.3, 8.NS.2, 8.G.1b, 8.EE.6
- 21) 8.EE.2, 8.NS.1, 8.EE.3, 8.G.1a, 8.F.1
- 22) 8.NS.1, 8.EE.1, 8.SP.1, 8.F.1, 8.EE.5
- 23) 8.EE.1, 8.EE.4, 8.F.1, 8.NS.2, 8.SP.3
- 24) 8.NS.1, 8.EE.2, 8.EE.4, 8.G.2, 8.SP.4
- 25) 8.EE.1, 8.NS.2, 8.EE.7a, 8.F.2, 8.G.5
- 26) 8.EE.2, 8.NS.2, 8.EE.4, 8.G.1c, 8.F.1
- 27) 8.EE.1, 8.NS.1, 8.F.1, 8.G.7, 8.G.3
- 28) 8.EE.3, 8.NS.1, 8.G.6, 8.F.4, 8.EE.6
- 29) 8.EE.1, 8.NS.2, 8.SP.1, 8.G.2, 8.EE.6
- 30) 8.EE.1, 8.EE.4, 8.NS.2, 8.F.3, 8.SP.4
- 31) 8.EE.1, 8.NS.1, 8.EE.3, 8.G.2, 8.EE.6
- 32) 8.EE.2, 8.EE.2, 8.EE.4, 8.G.5, 8.F.1
- 33) 8.NS.1, 8.EE.4, 8.EE.7a, 8.G.4, 8.SP.1
- 34) 8.EE.1, 8.NS.2, 8.EE.7b, 8.G.9, 8.SP.4
- 35) 8.NS.2, 8.EE.1, 8.EE.7b, 8.G.1, 8.F.1
- 36) 8.EE.1, 8.NS.2, 8.G.6, 8.F.1, 8.SP.3
- 37) 8.NS.1, 8.EE.2, 8.EE.4, 8.G.1b, 8.EE.6
- 38) 8.EE.1, 8.NS.1, 8.NS.2, 8.SP.1, 8.G.5
- 39) 8.EE.1, 8.NS.1, 8.EE.1, 8.NS.2, 8.SP.4
- 40) 8.EE.2, 8.EE.4, 8.NS.1, 8.G.7, 8.SP.1
- 41) 8.EE.1, 8.NS.1, 8.SP.1, 8.F.1, 8.G.5
- 42) 8.NS.1, 8.EE.4, 8.EE.6, 8.G.1b, 8.SP.1
- 43) 8.NS.1, 8.NS.2, 8.EE.4, 8.F.3, 8.EE.6
- 44) 8.EE.1, 8.NS.1, 8.G.4, 8.F.4, 8.EE.6
- 45) 8.EE.1, 8.NS.2, 8.EE.2, 8.SP.1, 8.F.1
- 46) 8.EE.1, 8.EE.1, 8.NS.2, 8.F.2, 8.G.5
- 47) 8.EE.3, 8.NS.2, 8.EE.2, 8.G.4, 8.F.1
- 48) 8.NS.1, 8.G.5, 8.EE.4, 8.F.1, 8.EE.5
- 49) 8.EE.2, 8.NS.1, 8.EE.1, 8.G.2, 8.SP.3
- 50) 8.EE.1, 8.EE.3, 8.F.1, 8.NS.2, 8.G.2
- 51) 8.EE.1, 8.NS.2, 8.EE.7a, 8.F.1, 8.EE.6
- 52) 8.EE.1, 8.NS.2, 8.EE.6, 8.F.4, 8.G.9
- 53) 8.NS.1, 8.EE.4, 8.G.4, 8.F.3, 8.SP.4
- 54) 8.EE.2, 8.NS.2, 8.EE.7b, 8.G.9, 8.SP.1
- 55) 8.EE.2, 8.EE.3, 8.NS.2, 8.SP.1, 8.G.3
- 56) 8.EE.1, 8.EE.1, 8.F.1, 8.NS.2, 8.G.3

# 8th Grade Math Common Core Warm-Up Program

## List of Warm-ups Where Each Standard is Covered (1 of 3)

### The Number System (8.NS)

8.NS.1: 1, 2, 4, 6, 7, 8, 10, 12, 13, 16, 17, 19, 21, 22, 24, 27, 28, 31, 33, 37, 38, 39, 40, 41, 42, 43, 44, 48, 49, 53, 57, 59, 60, 62, 66, 68, 69, 71, 73, 79, 80, 81, 83, 86, 87, 90, 91, 92, 93, 96, 102, 103, 104, 107, 112, 113, 114, 117

8.NS.2: 3, 5, 9, 11, 14, 15, 18, 20, 23, 25, 26, 29, 30, 34, 35, 36, 38, 39, 43, 45, 46, 47, 50, 51, 52, 54, 55, 56, 58, 61, 63, 64, 65, 67, 70, 72, 74, 75, 76, 77, 78, 81, 82, 84, 85, 87, 88, 89, 94, 95, 97, 98, 99, 100, 101, 105, 106, 108, 109, 110, 111, 115, 116, 118, 119, 120

### Expressions and Equations (8.EE)

8.EE.1: 1, 4, 5, 6, 8, 9, 10, 11, 13, 15, 17, 18, 20, 22, 23, 25, 27, 29, 30, 31, 34, 35, 36, 38, 39, 41, 44, 45, 46, 49, 50, 51, 52, 56, 58, 59, 60, 61, 63, 64, 65, 67, 68, 69, 70, 72, 73, 74, 75, 76, 78, 79, 80, 85, 86, 87, 88, 90, 91, 92, 94, 95, 96, 97, 99, 100, 101, 103, 105, 106, 108, 110, 111, 114, 115, 119, 120

8.EE.2: 2, 9, 14, 16, 17, 21, 24, 26, 32, 37, 40, 45, 47, 49, 54, 55, 59, 65, 66, 77, 82, 84, 89, 93, 98, 104, 109, 113, 116, 117, 118, 119

8.EE.3: 3, 6, 7, 18, 19, 20, 21, 28, 31, 47, 50, 55, 62, 76, 78, 85, 92, 94, 98, 107, 110

8.EE.4: 2, 4, 12, 15, 18, 23, 24, 26, 30, 32, 33, 37, 40, 42, 43, 48, 53, 57, 60, 67, 68, 69, 70, 71, 77, 81, 83, 89, 90, 93, 96, 99, 100, 102, 104, 108

8.EE.5: 3, 11, 16, 22, 48, 71, 80, 91

8.EE.6: 5, 7, 12, 19, 20, 27, 28, 29, 31, 37, 42, 43, 44, 51, 52, 60, 61, 62, 65, 70, 73, 78, 79, 81, 82, 86, 92, 97, 109, 115, 120

#### 8.EE.7:

8.EE.7a: 8, 11, 14, 19, 25, 33, 51, 58, 71, 78, 83, 86, 97, 103, 106, 113, 116

8.EE.7b: 10, 13, 34, 35, 54, 74, 88, 102, 108

# 8th Grade Math Common Core Warm-Up Program

## Common Core State Standards Warm-Up Answers (1-28)

- |     |                      |                          |                         |                    |                          |
|-----|----------------------|--------------------------|-------------------------|--------------------|--------------------------|
| 1)  | 1) 64                | 2) rational              | 3) yes                  | 4) 5, 9, 15        | 5) scatter plot          |
| 2)  | 1) 0.625             | 2) $x = 6$               | 3) $4.23 \times 10^7$   | 4) reflection      | 5) \$8.00                |
| 3)  | 1) 7,000,000         | 2) 4 and 5               | 3) yes                  | 4) true            | 5) 2 miles/hour          |
| 4)  | 1) 1/125             | 2) rational              | 3) $5.8 \times 10^{-7}$ | 4) no              | 5) $27^\circ$            |
| 5)  | 1) $x^8$             | 2) 7                     | 3) outlier              | 4) 5 inches        | 5) 1/2                   |
| 6)  | 1) $0.\overline{2}$  | 2) $23^7$                | 3) $3 \times 10^6$      | 4) false           | 5) $y = 4x + 1$          |
| 7)  | 1) 0.375             | 2) 0.00008               | 3) yes                  | 4) triangle KJL    | 5) $y = 2x$              |
| 8)  | 1) 81                | 2) irrational            | 3) infinitely many      | 4) translation     | 5) positive assoc.       |
| 9)  | 1) 64                | 2) 12                    | 3) A                    | 4) yes             | 5) $135^\circ$           |
| 10) | 1) 4                 | 2) irrational            | 3) $x = 5$              | 4) true            | 5) -7, 5, 23             |
| 11) | 1) 1/49              | 2) 7 and 8               | 3) $x = 20$             | 4) True            | 5) 10 miles/hour         |
| 12) | 1) 0.75              | 2) $8.53 \times 10^{10}$ | 3) no                   | 4) $32^\circ$      | 5) $y = 3x$              |
| 13) | 1) -16               | 2) rational              | 3) $x = 10$             | 4) reflection      | 5) $y = 5x - 2$          |
| 14) | 1) about 9 (or 10)   | 2) $x = 4$               | 3) no solution          | 4) $y = -1/2x + 6$ | 5) no                    |
| 15) | 1) $y^{10}$          | 2) 9                     | 3) $8 \times 10^5$      | 4) yes             | 5) $55^\circ$            |
| 16) | 1) $0.\overline{36}$ | 2) $x = 10$              | 3) 95                   | 4) 18 inches       | 5) blue car              |
| 17) | 1) 2                 | 2) $8^9$                 | 3) 1/3                  | 4) -6, 6, 18       | 5) negative assoc.       |
| 18) | 1) 81                | 2) $3.21 \times 10^{-8}$ | 3) about 30             | 4) yes             | 5) about 20 times        |
| 19) | 1) 500,000           | 2) rational              | 3) infinite solutions   | 4) $120^\circ$     | 5) 2/3                   |
| 20) | 1) 16/81             | 2) 0.0004                | 3) B                    | 4) False           | 5) $y = 1/2x + 3$        |
| 21) | 1) 11                | 2) irrational            | 3) $9 \times 10^9$      | 4) True            | 5) \$15.00               |
| 22) | 1) 0.8               | 2) 1/16                  | 3) negative assoc.      | 4) -8, 20, 48      | 5) 15 miles/gal          |
| 23) | 1) $x^{12}$          | 2) $6.2 \times 10^{11}$  | 3) yes                  | 4) 1.41 and 1.42   | 5) 2                     |
| 24) | 1) $0.\overline{18}$ | 2) $x = 3$               | 3) $2 \times 10^3$      | 4) rotation        | 5) 8 students            |
| 25) | 1) $36x^{14}$        | 2) 6                     | 3) infinite solutions   | 4) $y = 6x - 4$    | 5) $125^\circ$           |
| 26) | 1) 5                 | 2) about 100             | 3) $6 \times 10^9$      | 4) True            | 5) yes                   |
| 27) | 1) 2                 | 2) 5/11                  | 3) no                   | 4) 13 inches       | 5) (-2,-2) (-2,4) (4,-2) |
| 28) | 1) 300,000           | 2) irrational            | 3) no                   | 4) \$7.00/week     | 5) 2                     |

# Warm-Up 8

1)  $(-3)^4 =$

8.EE.1

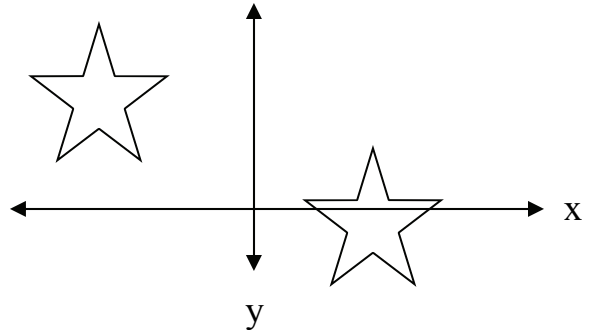
2) Is  $\pi$  a rational or an irrational number?

8.NS.1

3) How many solutions does the equation  $3x + 5 = 3x + 5$  have?

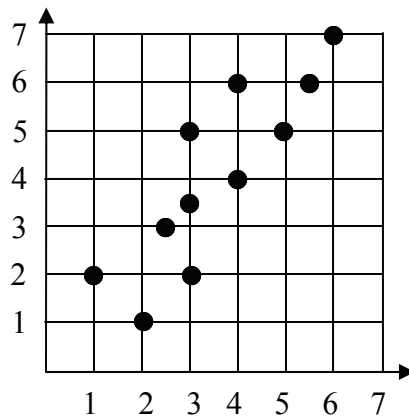
8.EE.7a

4) What term describes the transformation shown below?



8.G.2

5) What type of association is shown in the scatter plot below?



8.SP.1



## Warm-Up 28

1) Write  $3 \times 10^5$  in standard form.

8.EE.3

2) Is  $\sqrt{23}$  a rational or an irrational number?

8.NS.1

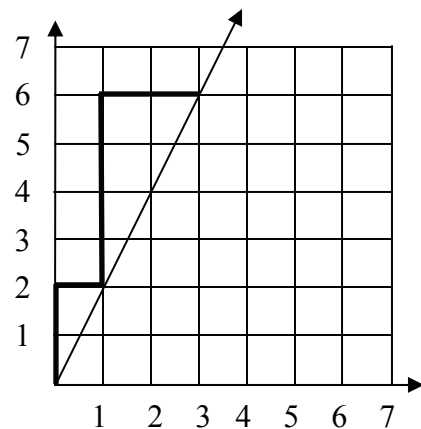
3) Is a triangle with sides that measure 6 inches, 8 inches, and 9 inches a right triangle?

8.G.6

4) Tran had \$40.00 saved for a new bike. Four weeks later he had saved \$68.00. At what rate of change did Tran's savings grow?

8.F.4

5) What is the slope of the line in the coordinate plane?



8.EE.6

# Warm-Up 31

1)  $9x^4 \cdot 8x^7 =$

8.EE.1

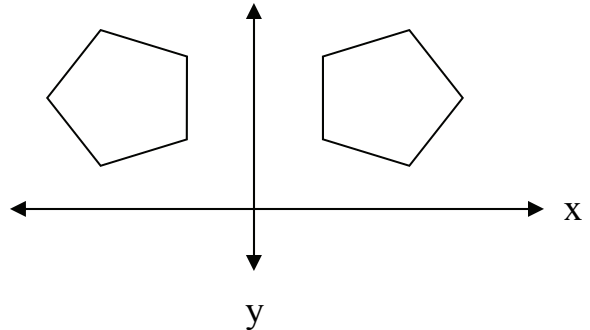
2) Is  $\sqrt{81}$  a rational or an irrational number?

8.NS.1

3) Write 0.0000000009 using a single digit times an integer power of 10.

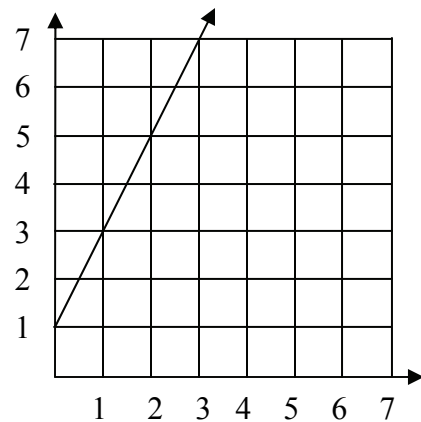
8.EE.3

4) What term describes the transformation shown below?



8.G.2

5) Derive the equation, in the form  $y = mx + b$ , for the line.



8.EE.6

## Warm-Up 46

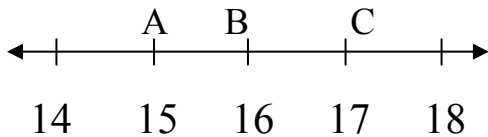
1)  $(3x^2)^3 =$

8.EE.1

2) Write  $3x \cdot 3x \cdot 3x \cdot 3x \cdot 3x \cdot 3x \cdot 3x$  using exponents.

8.EE.1

3) Which letter above the number line most accurately shows the location of  $5\pi$ ?



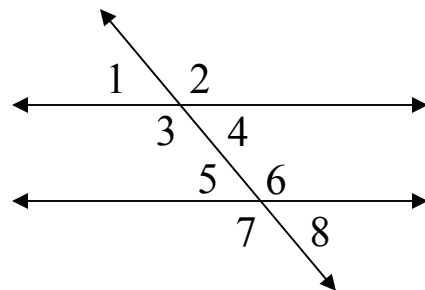
8.NS.2

4) Write the equation for the linear function in the form  $y = mx + b$ .

x	y
0	6
4	18
8	30

8.F.2

5) Angle 2 and angle 6 are corresponding angles. If angle 2 is  $125^\circ$ , what is the measure of angle 6?



8.G.5

## Warm-Up 58

1)  $6x^4 \cdot 7x^5 =$

8.EE.1

2) Estimate  $\sqrt{92}$  to the nearest integer.

8.NS.2

3) Solve the linear equation.  
 $5x + 3x + 1 = 9x - x - 5$

8.EE.7a

4) Use the Pythagorean Theorem to determine the length of one leg of a right triangle if the other leg is 7 inches and the hypotenuse is 25 inches.

8.G.7

5) The two-way table below shows the number of students surveyed who play baseball and football. How many of the students surveyed do not play baseball?

	Play FB	No FB	Total
Play BB	23	21	
No BB	19	12	
<b>Total</b>			<b>75</b>

8.SP.4

## Warm-Up 75

1)  $-3x^6 \cdot 9x^{-2} =$

8.EE.1

2) Compare using  $>$ ,  $<$ , or  $=$ .

$$2\pi^2 \quad \underline{\hspace{1cm}} \quad 3\sqrt{50}$$

8.NS.2

3) Write the quotient without a fraction bar.

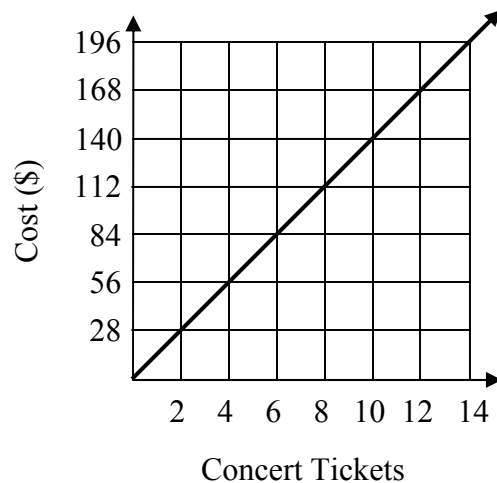
$$\frac{x^5 y^8}{x^7 y^2}$$

8.EE.1

4) Apply the Pythagorean Theorem to find the distance between the points (0,15) and (20, 0) on the coordinate plane.

8.G.8

5) Use the graph to determine the cost of seven tickets to the concert.



8.F.1

## Warm-Up 84

1)  $\sqrt{81x^8} =$

8.EE.2

2) Estimate the value of  $9(\sqrt{15})(\sqrt{101})$ .

8.NS.2

3) Is (3,8) a solution to this system of equations?

$$y = 5x - 7$$

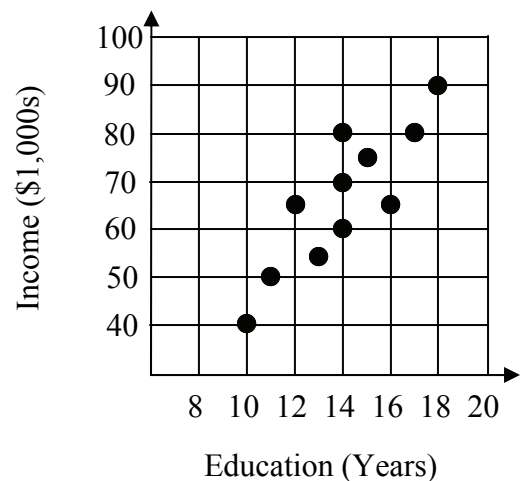
$$y = 2x + 2$$

8.EE.8a

4) Use the Pythagorean Theorem to determine the length of one leg of a right triangle if the other leg is 12 feet and the hypotenuse is 13 feet.

8.G.7

5) What is the income of the person with 17 years of education?



8.SP.1

## Warm-Up 90

1)  $4x^{-3} \cdot 13x^5 =$

8.EE.1

2) Is  $\sqrt{105}$  a rational or an irrational number?

8.NS.1

3) Write the quotient in scientific notation.

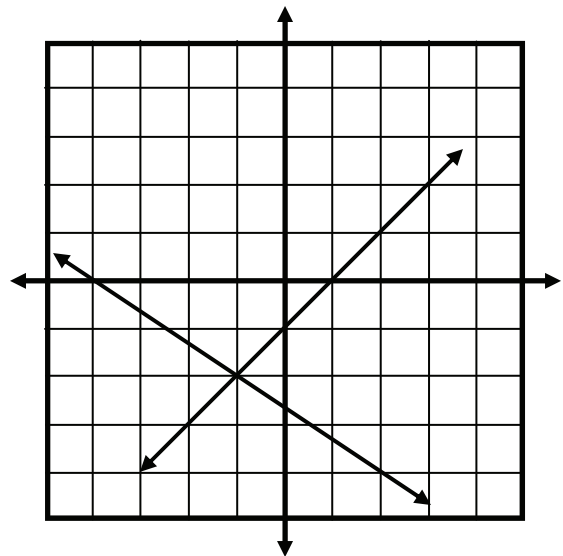
$$\frac{7.5 \times 10^9}{1.5 \times 10^3}$$

8.EE.4

4) True or false: After a reflection, corresponding segments of a figure and its image remain congruent.

8.G.1a

5) What is the solution to the system of equations shown in the graph below?



8.EE.8a

## Warm-Up 100

1)  $21x^{-7} \cdot 4x^8 =$

8.EE.1

2) What two integers is the  $\sqrt[3]{200}$  between?

8.NS.2

3) Write the quotient in scientific notation.

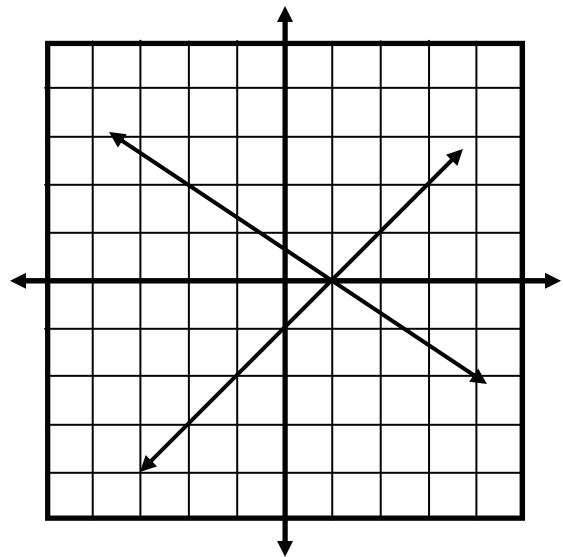
$$\frac{7.8 \times 10^8}{1.3 \times 10^5}$$

8.EE.4

4) A ladder leaning against a building is 26 feet long. If it touches the wall 24 feet above the ground, how far is the base of the ladder from the wall?

8.G.7

5) What is the solution to the system of equations shown in the graph below?



8.EE.8a



## Warm-Up 105

1)  $(\frac{3}{7})^3 =$

8.EE.1

2) Estimate the value of  $2\pi(\sqrt{17})(\sqrt{50})$ .

8.NS.2

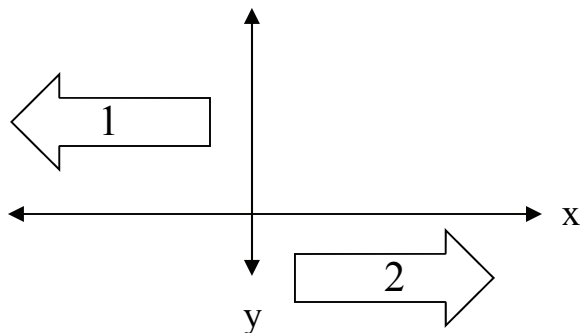
3) Solve the system of equations using substitution.

$$y = 7x - 8$$

$$4x + 3y = -74$$

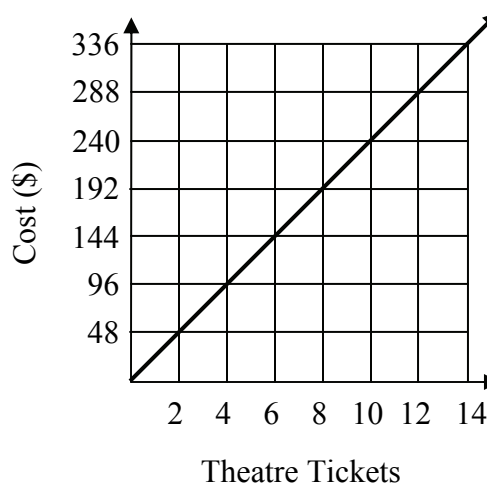
8.EE.8b

4) Describe a sequence that will transform figure 1 into figure 2.



8.G.2

5) Use the graph to determine the cost of thirteen tickets to the theatre.



8.F.1

## Warm-Up 116

1)  $\sqrt{10,000x^{42}} =$

8.EE.2

2) Compare using  $>$ ,  $<$ , or  $=$ .  
 $5\sqrt{79}$  \_\_\_\_\_  $7\sqrt{60}$

8.NS.2

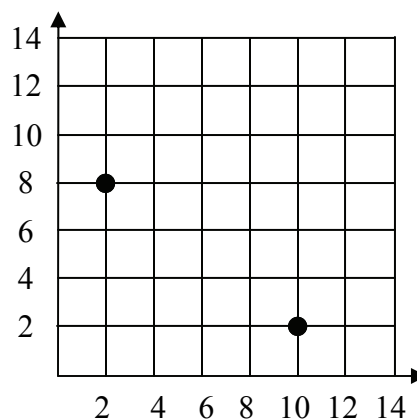
3) Solve the linear equation.  
 $4x + x - 6 = -3x + 8x - 5 - 1$

8.EE.7a

4) Reggie had \$820.00 saved for a family trip. Five weeks later he had saved \$1,220.00. At what rate of change did Reggie's savings grow?

8.F.4

5) Apply the Pythagorean Theorem to find the distance between the two points.



8.G.8

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