



MATH  
WARM-UP  
15 MINUTES

Google

# MATH PASSPORT WARM UP GUIDE

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## GOOGLE EARTH USAGE OVERVIEW:

Teachers will use [I'm Feeling Lucky](#) and [Street View](#) in [Google Earth](#) to randomly select a location in the world and relate it to mathematics concepts. Teachers can also choose to preselect a location that lends itself well to relevant standards and objectives using [Search](#) or [Voyager Stories](#).

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## LESSON SUMMARY:

- Passport Warm Up is an engaging daily routine in which students review mathematics objectives.
  - This activity is designed to be independent practice for students requiring minimal to no direct instruction on the part of the teacher.
  - Teachers can choose from the standards based example questions listed below or use them as inspiration to generate their own questions.
  - To stay within the 15 minute time frame, teachers should use 1-2 questions per subject.
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## LEARNING OBJECTIVES:

Students will engage in daily review of grade level mathematics concepts.

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# SUGGESTED STANDARDS

## GRADES 4 - 8

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GRADE 4: [CCSS.MATH.CONTENT.4.NBT.A.2](#)- Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using  $>$ ,  $=$ , and  $<$  symbols to record the results of comparisons.

[CCSS.MATH.CONTENT.4.NBT.A.3](#)- Use place value understanding to round multi-digit whole numbers to any place.

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GRADE 5: [CCSS.MATH.CONTENT.5.G.B.3](#)- Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.

[CCSS.MATH.CONTENT.5.NBT.A.1](#)- Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and  $\frac{1}{10}$  of what it represents in the place to its left.

[CCSS.MATH.CONTENT.5.NBT.B.5](#)- Fluently multiply multi-digit whole numbers using the standard algorithm.

[CCSS.MATH.CONTENT.5.NBT.B.6](#)- Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

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GRADE 6: [CCSS.MATH.CONTENT.6.RP.A.3](#)- Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

[CCSS.MATH.CONTENT.6.EE.C.9](#)- Represent and analyze quantitative relationships between dependent and independent variables.

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GRADE 7: [CCSS.MATH.CONTENT.7.NS.A.2](#)- Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.

[CCSS.MATH.CONTENT.7.EE.A.2](#)- Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. For example,  $a + 0.05a = 1.05a$  means that “increase by 5%” is the same as “multiply by 1.05.”

[CCSS.MATH.CONTENT.7.RP.A.3](#)- Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.



# SUGGESTED STANDARDS

## GRADES 4 - 8 Continued

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GRADE 8:

[CCSS.MATH.CONTENT.8.SPA.4](#)- Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?

[CCSS.MATH.CONTENT.8.F.B.4](#)- Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two  $(x, y)$  values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.

[CCSS.MATH.CONTENT.8.EE.A.4](#)- Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology

[CCSS.MATH.CONTENT.8.EE.A.3](#)- Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. For example, estimate the population of the United States as 3 times  $10^8$  and the population of the world as 7 times  $10^9$ , and determine that the world population is more than 20 times larger.

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TIME: 15 minutes

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MATERIALS NEEDED:

- Access to Google Earth [“I’m Feeling Lucky”/Voyager](#).
- Student copies of Passport Warm Up Student Response Template.

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IMPLEMENTATION GUIDE:

1. Select the subjects, standards and questions that are appropriate to your class.
2. Provide each student in your class with a copy of the Passport Warm Up Student Response Template (below).
3. Use [I’m Feeling Lucky](#) to “roll the dice” and randomly select a location in the world OR pre-select a location using [Search](#) or a [Voyager Story](#).
4. Students respond to the questions using a print out of the Student Response Template (below) OR teachers can share the Student Response Template using [Google Classroom](#).
5. When relevant, use [Street View](#), [Google Search](#) and [Wikipedia](#) to gather the information needed for students to answer the questions about that location. Students can work independently or with a partner to search for information needed.
6. Allow time for students to share their answers with the class.
7. Quick Tip: Track your classroom’s “travels” using [Google Tour Builder](#)!

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CREDITS: Written by Sarah Schwartz Johnson in collaboration with Jason Wallis, Dennis Puhr, Kevin Graham and Kelly O’Connor.

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\*Note - this template is designed for teachers to modify for use with their grade level and standards.

# MATH STANDARDS BASED EXAMPLE QUESTIONS

GRADE 4:

(For locations with a population less than or equal to 1,000,000)

- Round the population of this location to the nearest thousand, ten thousand and hundred thousand.
- Using the population, write the value of the underlined digit (teacher selects a digit to underline).
- Write the population of this location using number names.
- Write the population of this location in expanded form.
- Compare the population of this location to the population where you live using  $>$ ,  $<$  or  $=$ .

GRADE 5:

- Identify and name examples of the following 2-dimensional shapes and describe or sketch them below: quadrilateral, triangle, pentagon, hexagon, octagon, circle.
- Find an example of both parallel and perpendicular lines. Describe or sketch them below.
- Using the population of this location, write the value of the underlined digit (teacher selects a digit to underline).
- Double (triple, quadruple) the area of this location. Write the new area in square feet.
- If the area of this location was divided in half, what would the size of each part be in square feet?

GRADE 6:

- What is the currency of this location? Research the conversion rate for \$1. Calculate the conversion rate for \$5, \$25, \$50 and \$100.
- What is the current population of this location? The census estimates that in the next year, the population will grow by 15%. Write and evaluate an expression to represent this growth.
- Research the mean and median annual temperature for this location. Write an explanation of the difference between the two measurements.
- Use the ratio 1 foot = 12 inches to convert the area of this location in square feet into square inches.
- Use the formula  $T(^{\circ}\text{C}) = (T(^{\circ}\text{F}) - 32) \times 5/9$  to convert the temperature from degrees Fahrenheit to degrees Celsius.

# MATH STANDARDS BASED EXAMPLE QUESTIONS CONTINUED

GRADE 7:

- What is the current population of this location? The census predicts that in the next year, the population will decrease by 17%. Write and evaluate an expression to represent the change in population.
- Research the average annual temperature in this location for last year. Scientists predict that temperatures will increase by 6% globally this year. Write 2 equivalent expressions to represent this change.
- Use the formula  $T(^{\circ}\text{C}) = (T(^{\circ}\text{F}) - 32) \times 5/9$  to convert the temperature from degrees Fahrenheit to degrees Celsius.
- Use the population and area of this location to calculate the population density of people per square foot.
- What is the currency of this location? Research the conversion rate for \$1. Calculate the conversion rate for \$5, \$25, \$50 and \$100.

GRADE 8:

- What is the population of this location? Express the population using scientific notation.
- What is the population of this location? Approximately how many times larger is the population of the world (7,600,000,000).
- What is the area of this location in square feet? Convert the area to square inches. Express your answer using scientific notation.
- What is the currency of this location? What is the conversion rate to \$USD? Find a function that relates the number of \$USD to the value of the currency in this location.
- Work with a partner to brainstorm a list of topics to gather categorical data for this location (i.e. rainfall per month, gas prices per month, movie tickets sold per month, etc.) Then, choose two unrelated topics that you predict would show evidence of an association and explain your reasoning. (Extension: research actual data and test your hypothesis!).

STUDENT RESPONSE TEMPLATE:

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Welcome to:

**MATH**