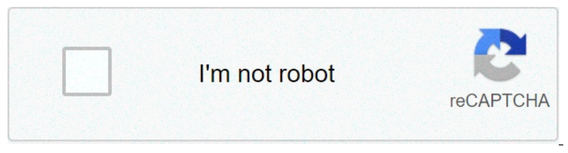

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Lesson 1 skills practice rational numbers answer key

Lesson 1 skills practice rational numbers answer key 8th grade.

Standards for mathematical practice describe variety of skills that math educators at all levels should try to develop in their students. These practices rest on important “processes and skills” with a long importance in mathematical education. The first of these are the NCTM process standards of problem solving, reasoning and testing, communication, representation and connections. The second is the threads of mathematical competence specified in the report of the National Research Council Adding It Up: adaptive reasoning, strategic competence, conceptual understanding (including mathematical concepts, operations and relationships), procedural fluidity (scill in carrying out procedures in a flexible, precise, efficient and appropriate manner), and productive disposition (accommodation inclination to see mathematics as reasonable, useful and useful, coupled with a single Standards conviction in this domain:CCra. Make sense of trouble and persevere in solving them. The mathematically competent students begin by explaining to themselves the meaning of a problem and looking for points of entry to its solution. They analyze data, constraints, relationships and objectives. They speculate about the shape and meaning of the solution and plan a solution path rather than simply jump into a solution attempt. They consider similar problems, and try special cases and simpler forms of the original problem in order to obtain information about its solution. They control and evaluate their progress and change course if necessary. Older students may, depending on the context of the problem, transform algebraic expressions or change the display window on their chart calculator to get the information they need. Mathematically competent students can explain the correspondences between equations, verbal descriptions, tables and graphs or draw diagrams of important features and relationships, graphic data and search for regularity or trends. Young students could rely on the use of concrete objects or images to help conceptualize and solve a problem. Mathematically competent students control their answers to problems using a different method, and they are continually wondering: Does that make sense? They can understand the approaches of others to solve complex problems and identify correspondences between different approaches. CCSS.Math.Practice.MP2 Abstract and quantitative reasoning. Mathematically competent students make sense of quantity and their relationships in problem situations. They bring two complementary capacities to bring about problems involving quantitative relations: the ability to decontextualize—astrate a certain situation and represent it symbolically and manipulate representative symbols as if they had aown, without necessarily attending their referents—and the ability to contextualize, to stop as necessary during the process of manipulation forinvestigate the referents for the symbols involved. Quantitative reasoning involves the habit of creating a coherent representation of the problem in question; of considering the units involved; of dealing with the meaning of quantities, not just how to calculate them; of knowing and using the different properties of operations and objects flexibly. CCSS.Math.Practice.MP3 Build valid arguments and criticize others' reasoning.Mathematically competent students understand and use the stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of assertions to explore the truth of their conjectures. They can analyze situations by breaking them down into cases, and they can recognize and use counter-examples. They shall justify their findings, communicate them to others and respond to others' arguments. They reason inductively on the data, making plausible arguments that take into account the context from which the data originated. Mathematically skilled students are also able to compare the effectiveness of two plausible arguments, distinguish the correct logic or wrong reasoning from the faulty one, and “if there is a defect in an argument”, explain what it is. Elementary students can build topics using concrete references such as objects, drawings, diagrams and actions. Such arguments can be sensible and correct, even if they are not generalized or formalized until later stages. Later, students learn to determine the domains to which a topic applies. Students of all grades can listen to or read each other’s arguments, decide if they make sense, and ask useful questions to clarify or improve the arguments. CCSS.Math.Practice.MP4 Model with math.Mathematically competent students can apply the math they know to solve problems that arise in everyday life, in society and in the workplace. In the early years, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student could apply proportional reasoning to plan a school event or analyze a problem in the community. From high school, a student could use geometry to solve a design problem or use a function to describe how one amount of interest depends on another. Mathematically competent students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may require further revision. They are able to identify important quantities in a practical situation and map their relationships using tools such as diagrams, bidirectional tables, graphs, diagrams of and formulas. They can analyze these relationships mathematically to draw conclusions. They systematically interpret their mathematical results in the context of the situation and reflect on the meaning of the results, possibly improving the model if it did not achieve its purpose. CCSS.Math.Practice.MP5 Use appropriate tools strategically. Mathematically strategically. MathematicallyStudents consider the tools available during the resolution of a mathematical problem. These tools could include pencil and paper, concrete models, a ruler, a goniometer, a calculator, a spreadsheet, a computer algebra system, a statistical package or a dynamic geometric software. Experienced students are sufficiently familiar with the appropriate tools for their degree or course to make fair decisions on when each of these tools could be useful, recognizing both intuition and their limitations. For example, mathematically skilled high school students analyze graphics of functions and solutions generated using a graphic calculator. They detect possible errors using strategically estimation and other mathematical knowledge. When making mathematical models, they know that the technology can allow them to view the results of variable hypotheses, explore the consequences and compare forecasts with data. Mathematically skilled students at various levels of degree are able to identify relevant external mathematical resources, such as digital content located on a website and use them to lay or solve problems. I am able to use technological tools to explore and deepen their understanding of the concepts. Ccss.math.practice.mp6 participates in accuracy. Modematalizable students try to communicate accurately to others. They try to use clear definitions under discussion with others and in its own reasoning. Indicate the meaning of the symbols that choose, including the use of the equal sign constantly and appropriately. They are attentive to specify the measurement units and the labeling of the axes to clarify the correspondence with quantities in a problem. They calculate carefully and efficient, express numerical responses with an appropriate degree of precision for the context of problems. In elementary votes, students give explanations carefully formulated to each other. When they reach high school that they learned to examine the statements and make explicit use of definitions. Ccss.math.practice.mp7 Search and exploits the use of the structure. Amatatically skilled students carefully look to discern a scheme or a structure. Young students, for example, may notice that three and seven are the same quantity of seven and three, or can order a collection of shapes based on how many sides the forms have. Later, students will see 7 Ãƒ- 8 equal to the well-remembers 7 Ãƒ- 5 + 7 Ãƒ- 3, in preparation for the learning of the distribution property. In the X2 + 9x + 14 expression, the older students can see the 14 as 2 Ã £ -7 and 9 Like 2 + 7. Recognize the meaning of an existing line in a geometric figure and can use the strategy to draw a auxiliary line for problems. They can also go back for an overview and a moving perspective. They can see complicated things, such as some algebraic expressions, such as individual objects or as composed by different objects. For example, they can see 5 - 3 (x - y) 2 as 5 minus a positive number times a square and andWhich to realize that its value cannot be more than 5 for any real number X and Y. Ccss.math.practice.mp8 Search and express regularity in repeated reasoning. Mathematically competent students notice if calculations are repeated, and seek both general methods and shortcuts. Higher elementary students may notice when they divide 25 to 11 that are repeating the same calculations more and more and more, and conclude that they have a repetitive decimal. Paying attention to the calculation of the slope as they repeatedly control if the points are on the line through (1, 2) with a slope 3, middle school students could abstract equation (Y - 2) / (X - 1) = 3 . Notify the regularity in the way the terms cancel when expanding (x - 1) (x + 1) (x - 1) (x2 + x + 1), and (x - 1) (x3 + x2 + x + 1) They could take them to the general formula for the sum of a geometric series. While working to solve a problem, mathematically competent students maintain process supervision while attending details. They continuously evaluate the reasonableness of their intermediate results. Connecting the standards for mathematical practice to the standards for mathematical contents The standards for mathematical practice describe the ways in which the development of practitioners of students of the mathematics discipline increasingly should engage with thematic matter, as they grow in mathematical maturity and Skills during the elementary, medium and higher years. Curricula designers, evaluations and professional development should all participate in the need to link mathematical practices to mathematical content in mathematical education. The standards for mathematical contents are a balanced combination of procedure and understanding. The expectations starting with the word "understanding" are often particularly good opportunities to link the practices to the content. Students who do not understand a topic can count on too heavy procedures. Without a flexible base from which to work, may be less likely to consider similar problems, representing problems consistently, justify conclusions, apply mathematics to practical situations, use technology with mind to work with mathematics, explain mathematics accurately to other students , step back for an overview, or deviate from a known procedure to find a shortcut. In short, a lack of understanding effectively prevents a student from engaging in mathematical practices. In this regard, content standards that establish an expectation of understanding are potential "intersection points" between standards for mathematical content and standards for mathematical practice. These intersection points are intended to be weighted towards the central and generative concepts in mathematics that most deserve the time, resources, innovative energies, and focus needed to qualitatively improve the curriculum, education, assessment, professional development and achievement of students in school mathematics.