

7th Grade Math

PISD Curriculum: Year at a Glance

Bundle	<i>Title</i>	
	Big Ideas/Enduring Understandings	Guiding Questions
<i>Fraction and Decimal Concepts</i>		
1	Number sense can be developed utilizing benchmark fractions and decimals, and being able to recognize equivalent values in different forms.	<ol style="list-style-type: none"> How can you determine if a number is greater than or less than $\frac{1}{2}$ or other benchmarks? How do you convert between fractions and decimals? What is the relationship between fractions and decimals?
	<i>Addition & Subtraction of Fractions and Decimals</i>	
2	Addition and subtraction of fractions requires manipulating pieces of the same size.	<ol style="list-style-type: none"> How do you know that the pieces of fractions are the same size? How can you make the pieces of fractions the same size?
	<i>Multiplication and Division of Fractions & Decimals; Integer Operations</i>	
3	Multiplication does not always make a larger quantity. Division does not always make a smaller quantity.	<ol style="list-style-type: none"> Does multiplication always result in a product larger than either factor? Explain. Does division always result in a quotient smaller than the dividend and divisor? Explain. Do fractional pieces have to be the same size to multiply and divide fractions like when you add and subtract fractions? Why or why not?
	Integers are the numbers one can count with items such as apples or fingers, and their opposites as well as 0.	<ol style="list-style-type: none"> How can you decide if the sum of two numbers is positive, negative or zero without actually calculating the sum or difference? How can any difference $a - b$ of two numbers be restated as an equivalent addition statement? How would you decide whether the product of three numbers is positive or negative?
<i>Finish Integer Operations; Start Exponents, Square Roots, and Order of Operations</i>		
4	Integers are the numbers one can count with items such as apples or fingers, and their negatives as well as 0.	<ol style="list-style-type: none"> How can you decide if the sum of two numbers is positive, negative or zero without actually calculating the sum or difference? How can any difference $a - b$ of two numbers be restated as an equivalent addition statement? How would you decide whether the product of three numbers is positive or negative?
	Exponents represent repeated multiplication of the base number, not the base number multiplied by the exponent.	<ol style="list-style-type: none"> How is a^n different from $a * n$?
	Square roots are the length of the side of a square.	<ol style="list-style-type: none"> How can you estimate the square root of a number?
	The result of a series of operations is impacted by the order in which the operations are performed. There is a conventional order of operations that produces a standard outcome for a given expression.	<ol style="list-style-type: none"> What is an example of an expression where the use of parentheses changes the result of a computation? Why do we need a conventional order of operations?
<i>Finish Exponents, Square Roots, and Order of Operations; Start Rules, Solving Equations and nth Term</i>		
5	Exponents represent repeated multiplication of the base number.	<ol style="list-style-type: none"> How is a^n different from $a * n$?
	The square root of a number, n , can be represented by the length of the side of a square with area = n .	<ol style="list-style-type: none"> How can you estimate the square root of a number?
	The result of a series of operations is impacted by the order in which the operations are performed. There is a conventional order of operations that produces a standard outcome for a given expression.	<ol style="list-style-type: none"> What is an example of an expression where the use of parentheses changes the result of a computation? Why do we need a conventional order of operations?
	Solving an equation means finding the value of the variable that makes the number sentence mathematically true.	<ol style="list-style-type: none"> What is a process you could use to determine the value of the variable in the model of an equation?
	A variable in a formula is the stage/process/position number. An important relationship in a sequence of numbers is between the term and the value of the term.	<ol style="list-style-type: none"> What is the importance of the variable in an expression or equation? How would you determine the formula from which a given sequence of numbers is built?
<i>Finish Rules, Solving Equations and nth Term</i>		
6	Solving an equation means finding the value of the variable that makes the number sentence mathematically true.	<ol style="list-style-type: none"> How would you determine the value of the variable in the model of an equation?
	A variable in a formula is the stage/process/position number. An important relationship in a sequence of numbers is between the term and the value of the term.	<ol style="list-style-type: none"> What is the importance of the variable in an expression or equation? How would you determine the formula from which a given sequence of numbers is built?

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Bundle	Title	
	Big Ideas/Enduring Understandings	Guiding Questions
Ratios, Unit Rate, and Percents		
7	Relationships between quantities (part-to-part and part-to-whole) can be expressed many ways.	<ol style="list-style-type: none"> How can you choose an appropriate method to make comparisons among quantities using ratios, percents, fractions, rates, or differences? How is being able to express a numerical relationship as a ratio useful?
	The relationship between some measurable quantity and one unit of another is called a unit rate.	<ol style="list-style-type: none"> Why are unit rates needed to make effective comparisons?
	Percents are used in the real-world to describe part of a whole. One percent is equal to one one-hundredth (1/100) of a whole.	<ol style="list-style-type: none"> Why are percents used in store sales signs rather than fractions or decimals? How can you use estimation and mental math to calculate a 20% tip?
Coordinate Plane, Data Representations, Mean, Median, Mode and Range		
8	Ordered pairs can be used to represent the relationship between input data and output data or location on a coordinate plane.	<ol style="list-style-type: none"> How is a coordinate plane used? How can you tell which quadrant an ordered pair is in by looking at the signs of its x- and y-coordinates?
	Central tendencies are different ways of expressing the “middle” of a data set.	<ol style="list-style-type: none"> How is it possible for two sets of data to consist of different numbers but have the same mean, the same mode, and the same median? In what kinds of situations can you use the mode, but not the mean or the median, to identify what is typical? How can the mean be interpreted as a balance point in a distribution? What is the effect of an outlier on a measure of central tendency?
	Data can be represented in many forms, some of which can be misleading. Consumers must critically view the graph or chart in order to evaluate its validity.	<ol style="list-style-type: none"> How can you manipulate a graph to skew the appearance of the data? How does displaying data in tables or graphs help you identify patterns or properties of a distribution?
	Ordered pairs can be used to represent the relationship between input data and output data or location on a coordinate plane.	<ol style="list-style-type: none"> How is a coordinate plane used? How can you tell which quadrant an ordered pair is in by looking at the signs of its x- and y-coordinates?
2D Geometry		
9	Polygons and angles are classified by their characteristics.	<ol style="list-style-type: none"> What characteristics are used to classify polygons?
	Perimeter is a linear measurement, and area is not.	<ol style="list-style-type: none"> Why do circles not have a perimeter? Why would you have to calculate an area in the real-world?
	Reflections and translations are ways to describe different types of movement on a coordinate plane.	<ol style="list-style-type: none"> How is a reflected image similar to and different than the original? In a reflection, how are points and images related to the line of reflection? How do you mathematically express the movement of a translated figure? How can an understanding of integers be useful with translations?
3D Geometry, Probability		
10	Volume is present in real world situations such as containers for liquids or solids, laying cement, filling holes, etc.	<ol style="list-style-type: none"> What are different ways to determine the volume of a prism or cylinder? What situation would require you to find the volume of a prism or cylinder in the real world? Is it your opinion that finding volumes using the formula or the net is better? Please explain your choice.
	3D figures can be “unfolded” to reveal pieces which are 2D figures. When put together correctly (to form a net of a figure), these pieces build a solid.	<ol style="list-style-type: none"> How can you draw a net for a triangular prism?
	Your perspective while viewing a 3D object will alter the silhouette you see.	<ol style="list-style-type: none"> When would it be important to be able to see the different perspectives/views of a 3D figure?
TAKS Review, TAKS Testing, Post TAKS		
11	TAKS readiness	<ol style="list-style-type: none"> What skills does the data show that you can you improve on with instruction and practice before TAKS?
Integer Operations, Percents and Technology		
12	Many 7 th grade math skills are essential for success in 8 th grade math.	<ol style="list-style-type: none"> What procedure would you use to add or subtract fractions/decimals? What are similarities and differences between positive and negative numbers. In what a real-world situations would you need to use a negative number? Where are percents used in daily life and why? What type of problem would you solve using a percent of a number?