**North East School Division Planning Organizer**



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| **Stage 1 – Begin With the End in Mind** |
| **Big Ideas**What do we want students to remember 40 years from now? |
| Math means many answers.Math is about relationships.In what ways do consumers use mathematics?

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| **Processes** |
| Communication | Connections |
| Reasoning | Technology |
| Visualization | Problem Solving |
| Mental Math and Estimation |

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| **Outcomes** Circle the verbs or skills, underline the qualifiers |
| **Strands are: Number (N), Patterns & Relations (P), Shape & Space (SS) and Statistics & Probability (SP)**N8.2 Expand and demonstrate understanding of percents greater than or equal to 0% (including fractional and decimal percents) concretely, pictorially, and symbolically. [CN, PS, R, V]N8.3 Demonstrate understanding of rates, ratios, and proportional reasoning concretely, pictorially, and symbolically. [C, CN, PS, R, V]N8.2 Expand 🡪 understanding (Content - percents> or = 0%, Method –  concretely, pictorially, and symbolically) Demonstrate 🡪 understanding N8.3 Demonstrate 🡪 understanding (Content – rates, ratios, proportional  reasoning, Method - concretely, pictorially, and  symbolically) Demonstrate 🡪 understanding |
| **Understandings** What do we hope students will come to understand as a result of learning? Think: Students will understand that… | **Essential Questions** Questions for deeper understanding that invite deep thinking about the ideas and issues throughout the unit. |
| * Percents can be greater than 100 and less than 1.
* Percents are used in consumer mathematics.
* A Ratio is a comparison of numbers that have similar units
* .A Proportion is a statement of equivalency between two ratios.
* Equivalent Ratios can be used to compare Ratios.
* Proportional reasoning is the basis of many concepts, including similarity in geometry and graphing in algebra.
* A rate is a comparison of numbers that have different units.
* Rates and Ratios (proportional reasoning) can be used to solve many problems.
 | * Where in the world will I find percents that are greater than 100 and less than 1?
* Why are percents important for consumers?
* Can a percent be written as a ratio?
* How can equal ratios help solve problems?
* How are rates and ratios related?
* How can I model a percent?
* How can I support my thinking?
* What strategies can I use to solve percent/ratio/rate problems.
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| **Students need to know:** What is essential knowledge for students to have in order to demonstrate their understanding of the outcomes?  | **And be able to do:** What should they eventually be able to do as a result of their learning experiences in order to achieve the outcome? Should reference the indicators. Think: verb.  |
| 1. Given a fraction, decimal, or percent, calculate the other two forms.
2. Calculate percents from 0% to greater than 100%.
3. Find the whole, when given a percent, and find the percent increase and decrease.
4. Investigate the use of percent in consumer math.
5. Use models and diagrams to investigate ratios.
6. Write equivalent ratios
7. Use different strategies to compare ratios.
8. Set up a proportion to solve a problem.
9. Use models and diagrams to investigate rates.
10. Use unit rates to compare rates.
 | a. Recognize, represent, and explain situations, including for self, family, and communities, in which percent’s greater than 100 or fractional percents are meaningful (e.g., the percent profit made on the sale of fish).b. Represent a fractional percent and/or a percent greater than 100 using grid paper.c. Describe relationships between different types of representation (concrete, pictorial, and symbolic in percent, fractional, and decimal forms) for the same percent (e.g., how do 345 coloured grid squares relate to 345%, or why is 345% the same as 3.45).d. Record the percent, fraction, and decimal forms of a quantity shown by a representation on grid paper.e. Apply understanding of percents to solve problems, including situations involving combined percents or percents of percents (e.g., PST + GST, or 10% discount on a purchase already discounted 30%) and explain the reasoning.f. Explain, using concrete, pictorial, or symbolic representations, why the order of consecutive percents does not impact the final value (e.g., a decrease of 15% followed by an increase of 5% results in the same quantity as an increase of 5% followed by a decrease of 15%).g. Demonstrate, using concrete, pictorial, or symbolic representations, that two consecutive percents applied to a specific situation cannot be added or subtracted to give an overall percent change (e.g., a population increase of 10% followed by a population increase of 15% is not a 25% increase, a decrease of 10% followed by an increase of 10% will result in an overall change).h. Analyze choices and make decisions based upon percents and personal or community concerns and issues (e.g., deciding whether or not to have surgery if given a 75% chance of survival, deciding how much to buy if you can save 25% when two items are purchased, deciding whether or not to hunt for deer when a known percent of deer have chronic wasting disease, deciding about whether or not to use condoms knowing that they are 95% effective as birth control, making decisions about diet knowing that a high percentage of Aboriginal peoples have or will get diabetes).i. Explain the role and significance of percents in different situations (e.g., polls during elections, medical reports, percent down on purchases).j. Pose and solve problems involving percents stated as a percent, fraction, or decimal quantity.a. Identify and explain ratios and rates in familiar situations (e.g., cost per music download, traditional mixtures for bleaching, time for a hand-sized piece of fungus to burn, mixing of colours, number of boys to girls at a school dance, rates of traveling such as car, skidoo, motor boat or canoe, fishing nets and expected catches, or number of animals hunted and number of people to feed).b. Identify situations (such as providing for the family or a community through hunting) in which a given quantity of b represents a: • fraction• rate • quotient • percent • probability • ratio.c. Demonstrate (orally, through arts, concretely, pictorially, symbolically, and/or physically) the difference between ratios and rates.d. Verify or contradict proposed relationships between the different roles for quantities that can be expressed in the form of A/B.e. Write the symbolic form (e.g., 3:5 or 3 to 5 as a ratio, $3/min or $3 per one minute as a rate) for a concrete, physical, or pictorial representation of a ratio or rate.f. Explain how to recognize whether a comparison requires the use of proportional reasoning (ratios or rates) or subtraction.g. Create and solve problems involving rates, ratios, and/or probabilities. |