Mental Math :

This packet contains information you and your child might find helpful when reviewing and practicing Mental Math strategies in preparation for the district assessment in June. I have created a chart you can use to help communicate with me how your child is progressing with the multiplication tables and the mental math strategies. Please review/practice the strategies and/or quiz your child regularly (twice a week for about 10 minutes). If you feel your child is efficient with their basic facts (multiplication facts) then there is no need for you to review these further with your child. There is sample quiz with solutions at the back of this packet to help guide you. Please include a copy of any paper quizzes you give and score with your child. On Mondays, during class, your child will complete a small mental math quiz valued at 10% of their mark .

Scoring rubric for Mental Math:

 Please note that the provincial standard no longer requires students to complete assigned mental math questions in a timed setting, rather the focus is on their knowledge and problem solving skills. Each mental math question is graded on a 2-point scale. Students will receive a “2” if they efficiently solve the problem, that is, they used an efficient strategy (the one that gets them the correct answer quickly) and they clearly explained or indicated the strategy used. Students will receive a “1” if they solved the problem effectively, that is, they got the correct answer but they did not take the easiest route (they used a traditional algorithm perhaps), or there is no indication how they got the right answer (no explanation given). Students will get a “0” if they did not arrive at the correct answer.

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| Term 3 Multiplication Table Progress Chart |
| Date / Parent Initial | Basic facts that were quizzed | Score |
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| Term 3 Mental Math Strategies Progress Chart |
| Date / Parent Initial | Strategy(ies) quizzed | Score |
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Key Mental Math Strategies for Grade 7

**N1: Develop and apply divisibility rules for 2, 3, 4, 5, 6, 8, 9, and 10.**

A number is divisible by:

2 if it is even

3 if the sum of the digits is divisible by 3

4 if the number formed by the last 2 digits is divisible by 4

5 if the number ends in 0 or 5

6 if the number is even and divisible by 3

8 if the number is divisible by 4 and the resulting quotient is even;

 or if the number formed by the last 3 digits is divisible by 8

9 if the sum of the digits is divisible by 9

10 if the number ends in 0.

**N2: Demonstrate an understanding of the addition, subtraction, multiplication & division of decimals to solve problems.**

Front end strategy: When adding decimals, students should be encouraged to add the digits in each place value from left to right.

Ex.: 4.2 + 0.23 = 4.43

Estimation: students should develop a common sense estimate to get a sense of size of the answer.

Ex. 324.4 ÷ 0.97 (since 0.97 is close to 1 whole, the answer is close to 324).

 12.3 x 3.2 (the answer is close to 36 because 12 x 3 = 36)

Special Number: To mentally divide a decimal by 5, double both the dividend and divisor.

Ex.: 324.4 ÷ 5 = 648.8 ÷ 10 = 64.88

Distributive: Multiply each place value by the other, then add the answers together. Ex.: 2.1 x 4.7; 2 x 4 = 8, 2 x 7 = 1.4, 0.1 x 4 = 0.4, 0.1 x 0.7 = 0.07,

 then use front-end strategy to add: 8 + 1.4 + 0.4 + 0.07 = 9.87

**N3: Solve problems involving percents from 1% to 100%**

Students should make immediate mental connections between common percents and their fraction and decimals equivalents.

50% = ½ = 0.5 33 ¹/з% = ¹/з = 0.3333… 25% = ¼= 0.25

20% = ¹/5 = 0.2 10% = ¹/10 = 0.1 75% = ¾ = 0.75 66²/з % = ²/з = 0.6666...

\*Students should mentally calculate 5%, 15%, 20%, 30% etc. by first determining 10% of a number. Remember “of” means multiply and when multiplying it doesn’t matter which number comes first.

 Ex.: If 10% X 120 = 12, then 5% of 120 would be 6 and 20% X 120 would be 24

**N6: Demonstrate an understanding of addition & subtraction of integers**

Front End: (-46) + (-38) --🡪(-40) + (-30) = (-70); then (-6) + (-8) = -14;

so (-46) + (-38) = (-84)

Compensate: (-46) + (-38) --🡪 (-46) + (-40) = (-86), then (-86) + 2 = (-84)

 Remember the reason you add 2 back on is because the integers are negative

(-38 is bigger than -40; you took 2 too many off so you add it back on).

Compatible Numbers: (-28) + 63 + 37 + 33 + (-72)

 [(-28) + (-72)] + [(63) + 37] + 33 = (-100) + 100 + 33 = 33

**Other strategies learned in previous years should still be practiced:**

Double/half – 86 x 50 = 43 x 100 = 4300

Distribution: 12 x 28 = (10 x 28) +(2 x 28) = 280 + 56 = 200 + 130 + 6 = 336

 2824 ÷ 4 = (2800 ÷ 4) + (24 ÷ 4) = 700 + 6 = 706

Associative: 5 x 8 x 7 x 20 = (5 x 20) x (8 x 7) = 100 x 56 = 5600

Compensate: 500 – 297 = 500 – 300 +3 = 203

Balancing: 621 – 203 = 618 – 200 = 418

Counting on: 700 – 247-🡪247 + 3 = 250 & 250 + 50 = 300 & 300 + 400 = 700,

so 700 – 247 = 3 + 50 + 400 = 453

Sample Questions for Grade 7

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| **Question** | **Response (Score 1)** | **Strategy Used (Score 2)** |
| $6.10 + $2.03 | $8.13 | Front End |
| 400 – 197 | 203 | Compensate:400 – 200 = 200,then add 3 back on. |
| 2 x 20 x 5 x 5 | 1000 | Compatible Numbers:20 x 5 = 1002 x 5 = 10,100 x 10 = 1000 |
| 20 % of 140 | 28 | 10% of 140 = 14, so20% would be 28 |
| (-23) + (-61) | (-84) | Front End:(-20) + (-60) = (-80)(-3) + (-1) = (-4) |
| 84 ÷ 1000 | 0.084 | Move decimal 3 places to left |
| 80 x 20 | 1600 | Basic fact 8 x 2 = 16,then tack on trailing zeros |
| 184 x 5 | 920 | Double/Half 🡪 doubled 5 to make 10 and halved 18492 x 10 |
| 2824 ÷ 4 | 706 | Divisibility by 4 🡪 [2800 ÷ 4 = 700] + [24 ÷ 4 = 6] |
| 3.6 x 2.5 | 9 | Distributive: (3 x 2) + (3 x 0.5) + (0.6 x 2) + (0.6 x 0.5) = 6 + 1.5 + 1.2 + 0.3 |
| 80 x 25 | 2000 | Distribution: (80 x 20 = 1600) + (80 x 5 = 400) OR x 25 + 200 & Tack on trailing zero |
| 10% of what number is 67 | 670 | 67 x 10 |
| 412 x 20% | 82.4 | 10% of 412 is 41.2, so double 41.2 to get 20%. |
| 50 x 312 | 15 600 | Double/Half: double 50 to get 100, half of 312 is 156, then multiply. |