RICH MATHEMATICAL TASK BOOKLET

NUMBER Decimals, Percentages

YEAR 7- 8 EVEN YEARS

Copy Masters

Task 1

What percentage of your one whole container is filled with water?

Be ready to explain and justify how you know.

What percentage have you downloaded of that app?

How much more would you need to download to complete it?

Record using a range of different representations including symbols and be ready to explain and justify how they are equivalent.

Task 1 (independent)

1. Tan has a 750ml pump bottle. By playtime he has drunk 17% of the bottle. How many ml of water are left in his bottle?

2. Nanaia has a bag of 60 jellybeans that she shares with her friends. She gives 35% to one friend and 25% to another and she keeps the rest? How many of her jellybeans do each of her friends have and how many does she have?

3. Sunny take a 25L container with water on his camping trip. By the end of the first day of camp he has used 25% of the water in the container. How much water has he used (ml/l) how much water is left in the container (ml/l)?

4. Leisi has a bag of 60 jellybeans that she shares with her friends. She gives 15% to one friend and 60% to another and she keeps the rest? How many of her jellybeans do each of her friends have and how many does she have?

5. The cross-country track is 3km long. Jerico runs 65% of the distance before stopping to catch his breath. Max runs $\frac{3}{4}$ of the distance before stopping to catch his breath. How far did each of them run before stopping to catch their breath? Who ran the longest distance before stopping?

6. If you have one glass of water 25% full. How much more water do you need to make it 100% full? What about 10%? 76%? 99%? 10%? 1%? When you add the water to make the glass 100% full have you made more than one whole glass of water? Why or why not?

Task 2

You are running on the athletics track and this tape represents the track you run on. If I put the 1-digit card down at the start of it that indicates so far you have run 1 metre and the 2-digit card indicates that you have not reached 2 metres yet. How far have you run exactly?

How far have you run now?

Record using a range of different representations including symbols and be ready to explain and justify how they are equivalent.

Task 2 (independent)

What are their equivalent as percentages, fractions and decimals?

1.	5%	=	=
2.	$\frac{1}{4}$	=	=
3.	.1	=	=
4.	$\frac{3}{4}$	=	=
5.	90%	=	=
6.	.25	=	=
7.	Two-thirds	=	=
8.	2/6	=	=
9.	Three-tenths	=	=
10.	80%	=	=

Task 3

Simpson and Mattie were having a jump-off in the sandpit to see where they could jump to if they stood with their toes just before the edge. Josiah measured each jump and he said that Simpson won because although they both jumped 2.38 metres and neither of them reached 2.39 metres Simpson jumped further.

Can you record at least 12 different distances for his jump which shows Simpson did jump further.

Be ready to explain and justify your answers using number lines, diagrams, drawings, fractions, and decimals.

Task 3 (independent)

What are the fraction, percentage, or decimal equivalences for the following?

1. 30%
2. 12%
3. $\frac{1}{2}$
4. 33%
5. .90
6. .18
7. .67
8. .1
9. .3
10. .75

Task 4

There are three finalists in a gymnastics competition.

Here are their scores:

Contestant	Floor	Bar	Vault	Beam
1	8.903	7.96	8.897	9.03
2	9.1	7.991	7.98	9.004
3	7.567	7.99	8.0	9.039

Who came first? Second? Third?

How many points would the second finalist have needed to come first?

How many points would the third finalist have needed to come first?

Task 4 (independent)

Gina had to do some homework.

She had to put some decimal numbers in order from largest to smallest and this is what she did:

.90146	.9015	.9	.70000
.4405	.321	.4	.5
.450000	.45100	.510	.52
0.901	0.404	.3201	.520

You need to put them in the right order to help her out and then write her an explanation of why you needed to change the order she had them in. Explain the rules you were using to order each row.

Task 5

Solve these equations using two different ways

- 9.705 + 7.99 =
- 8.095 + 9.91 =
- 5.5 + 6.5123 =
- 7.3 – 0.27 =
- 8.109 – 1.09 =
- 1.45 – 0.55 =

Task 5 (independent)

True or False?

1. 3.15 + 3.15 = 3.3
2. 1.9 + 1. 9 = 1.18
3. 1.09 + 1.009 = 2. 099
4. 0.25 + 1.85 = 1.10
5. 2.09 + 1.11 = 3.110

Use place value to explain and justify your reasoning.

Task 6

Sima is going on a holiday to Samoa.

Different family members give him money to spend, and he has some money saved up.

The exchange rate is $1 New Zealand for 1.6557 Samoan tala.

His uncle gives him NZ$10. His aunty gives him NZ$100 and his father gives him NZ$185.

How much Samoan tala will he get in exchange?

If he was going to the U.S., the exchange rate for $1 New Zealand is USD$.63

How much would he get with the same amount of money in U.S. currency?

Task 6 (independent)

Solve the following:

- .5 + .05 =
- .5 + .505 =
- .3 + .03 =
- .3 + .0303 =
- .7 + .07 =
- .7 + 0.707 =

Write a statement to explain your solution to a younger child using place value.

Task 7

Where does the decimal point go?

1. 24 x 63 =
2. 0.24 x 6.3 =
3. 24 x 0.63 =
4. 2.4 x 63 =
5. 0.24 x 0.63 =

In your group decide where you will put the decimal point in each equation and be ready to explain and justify why you put it where you did.

When you have put the decimal point in each solution complete the equation to check whether your reasoning was correct. Be ready to explain why you needed to change your solution.

Task 7 (independent)

1. Consider these two calculations
   $3\frac{1}{2}$ x $2\frac{1}{4}$ and 2.276 x 3.18
   Without doing the calculations which product do you think would be the larger?
   First provide a reason for your answer and then check your reasoning by doing the calculations.

2. Without doing the calculations record how much larger is 0.76 x 5 than 0.75 x 5?
   First provide a reason for your answer and then check your reasoning by doing the calculations.

3. Write these decimals as fractions
   .6 3.11 0.234 0.04 7.39

4. Write these fractions as decimals
   $\frac{15}{10}$ $\frac{1}{10}$ $\frac{5}{1000}$ $\frac{264}{1000}$ $\frac{8}{100}$

5. Illustrate these decimals on a number line
   0.2 0.6 1.7 2.5 7.6 5 3.1

Task 8

The bus trip to Whangarei was 282km.

It took exactly 4.5 hours to travel.

What was the average rate in kilometres per hour?

Use the same strategy you used to solve this equation.

Estimate first and then do the calculation.

45.7 ÷ 1.83 =

Be ready to explain and justify your reasoning.

Task 8 (independent)

Solve these using their fraction equivalents and then rename them as decimals and show the result in a place value chart:

1. 5.3 x 1.1
2. 1.4 x 3.5
3. 1.2 x .1.2
4. 1.7 x 1.3
5. 2.5 x 2.5

What pattern can you identify? Can you explain why?

Task 9

Our local pizza restaurant makes a large quantity of dough which they cool store ready for use, using 36 cups of flour. The ratio of cups of flour to cups of water they use is 9:4.

How much water should they use?

What if they use 50 cups of flour? The ratio of cups of flour to cups of water they use is 10:5.

How much water should they use?

What if they use 66 cups of flour? The ratio of cups of flour to cups of water they use is 12:7.

How much water should they use?

Task 9 (independent task)

146 ÷ 7 = 20857 is correct to five digits but without the decimal point.

Can you use only this information to solve the following?

1. 146 ÷ 0.7 =
2. 1.46 ÷ 7 =
3. 14.6 ÷ 0.7 =
4. 1460 ÷ 70 =

Can you explain the patterns you notice using place value?

Task 10

Raj's older brother is saving for a new bike which will cost $480.

He earns $1500 per month.

He spends his money on bills, food and extras in the ratio of 8:3:4.

Of the money he spends on extras, he spends 80% and puts 20% into his savings account.

How long will it take his brother to save for his new bike?

Task 10 (independent task)

The ratio of girls to boys is 6:8. What is the fraction of girls to boys?

The ratio of girls to boys is 10:30. What is the fraction of girls to boys?

The ratio of girls to boys is 2:3. What is the fraction of girls to boys?

What pattern can you see? Can you make a conjecture about what you discovered? Record your reasoning.

Task 11 (optional task)

Replace the letter with a number

1. m x 10 = 35
2. j x .1 = 2.46
3. 346 = p x 10 + y x 100
4. 3.4 = 34 ÷ a
5. b = .77 ÷ 100

Write five more to share with the group.

Task 11 (independent - optional task)

Where does the decimal point go?

Before you compute an answer put in the decimal point and write an explanation of why you put it where it is.

1. 0.24 x 6.3 =
2. 24 x 0.63 =
3. 2.4 x 63 =
4. 0.24 x 0.63 =

Now check your answers with computation.

If there are differences record your reasoning.

Task 12 (optional task)

Replace the letter with a number

1. 67.718 + w = 91.381
2. 3.0009 + 0.111 = x
3. 8.9106 = 10 – y
4. 34 x r = 68000
5. .02 = s x.2
6. .32 = t x .2
7. 2.4 x u = 48

Can you write some using division to share with the group?