RICH MATHEMATICAL TASK BOOKLET

NUMBER Decimals, Percentages

YEAR 5- 6 ODD YEARS

Copy Masters

Task 1

Use the 3 bottles to explore the different amounts of water they can hold.

Discuss what percentage of each of your one whole bottle is filled with water? Discuss what percentage of water would need to be added to fill the bottle completely.

Be ready to explain and justify how you know.

Task 1 (independent)

Work with a partner and make flash cards to practice the 7 times-tables. Write the fact on one side and the answer on the other side. Test each other and note the ones that you don't know instantly and practice writing these out and saying it aloud to yourself four times.

1. Jenny has a box of 30 M&Ms that she shares with her friends. She gives 25% to one friend and 20% to another and she keeps the rest? How many does she keep?
   How many of her M&Ms do each of her friends have?
2. Jenny has a box of 50 M&Ms that she shares with her friends. She gives 10% to one friend and 40% to another and she keeps the rest? How many does she keep?
   How many of her M&Ms do each of her friends have?
3. Jenny has a box of 60 M&Ms that she shares with her friends. She gives 75% to one friend and 10% to another and she keeps the rest? How many does she keep?
   How many of her M&Ms do each of her friends have?
4. Jenny has a box of 100 M&Ms that she shares with her friends. She gives 40% to one friend and 5% to another and she keeps the rest? How many does she keep?
   How many of her M&Ms do each of her friends have?
5. Jenny has a box of 75 M&Ms that she shares with her friends. She gives 25% to one friend and 30% to another and she keeps the rest? How many does she keep?
   How many of her M&Ms do each of her friends have?
6. Jenny has a box of 90 M&Ms that she shares with her friends. She gives 55% to one friend and 5% to another and she keeps the rest? How many does she keep? How many of her M&Ms do each of her friends have?

Task 2

What percentage of that computer game have you downloaded?

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 2 (independent)

Work with a partner and make flash cards to practice any of the 1 to 6 times-tables that you don't know instantly. Write the fact on one side and the answer on the other side. Use the new flash cards and the 7 times-tables ones to test each other and note the ones that you don't know instantly and practice writing these out and saying it aloud to yourself four times.

1. Ayla has a 500ml pump bottle. By playtime she has drunk 25% of the bottle. How many ml of water are left in her bottle?
2. Ayla has a 750ml pump bottle. By playtime she has drunk 45% of the bottle. How many ml of water are left in her bottle?
3. Sam has a 15L container with water at the beach. By midday he has used 75% 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. Sam has a 12L container with water at the beach. By midday 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)?
5. Two friends go out for a run. They run 5km in total. Jane runs 65% of the distance before stopping to catch her 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?

Task 3

You and your friends are running on the athletics track in the park. This tape represents the track you run on.

If I put the 0-digit card down at the start of it that indicates so far you have run 0 metres and the 1-digit card indicates that you have not reached 1 metre yet.

As a percentage of the metre 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 3 (independent)

Make flash cards for the 8 times-tables with a partner. Write the equation on one side and the answer on the other. Use the flash-cards to test each other. For any that you don't know instantly, write it out and say it aloud four times.

What are their equivalent fractional numbers?

- 75% = =
- ¼ = =
- .7 = =
- $\frac{3}{4}$ = =
- 23% = =
- .45 = =
- Two-thirds = =
- $\frac{1}{5}$ = =
- 70% = =
- Three-fifths = =
- 130% = =
- .10 = =
- .01 = =
- .07 = =
- .13 = =

Task 4

Mike and Jonah were competing to see who could push toy cars further across the floor. Mike measured the distance each car went, and he said that Jonah won because although both their cars reached 3.45 metres and neither of them reached 3.46 metres Jonah's car went further.

Can you record at least 12 different distances for his car which shows Jonah's car went further.

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

Task 4 (independent)

Use your flash cards with a partner to practice your times-tables. For any that you are unsure of, write them out and say them out loud at least four times.

What numbers can you record between:

- .1 and .2
- 50% and 51%
- 5% and 6%
- .4 and .5
- .51 and .56
- .11 and .12
- .541 and .542
- 1.3 and 1.4
- 478.51 and 478.52

Task 5

Ella and Ethan were playing at the local swimming pool. Their dad gave them scores for their dives into the swimming pool. They agreed that the person with the highest total score out of three dives would win.

Ella scored 8.96, 7.046, 8.23 for her 3 dives.

Ethan's total score was 24.973.

Who won?

Can you explain and justify what her score was in more than one way?

Task 5 (independent)

Put these decimal numbers in order from largest to smallest:

- 1.00000, .900000, .99, .9
- .90146, .9015, .9000000, .99
- .4405, .4, .321, .99999, .4.9
- .50000, .45100, .510, .52, .5200009
- 1.2, 1.209, 1.21, 1.20099

Write an explanation to explain the rules you were using to order each row.

Task 6

Gaylene is training for a fund-raising walkathon. She aims to slowly build up the distance she can walk at pace. For the first week she decides she needs to walk 25 km in total across all the days of the week.

On Monday she walks 1.9310km. On Tuesday she walks 2.9km. On Wednesday she walks 3.101. On Thursday she walks 4.0398km. On Friday she walks 1.2. On Saturday she walks 5. 1km. On Sunday she does a big burst and walks 7.03km

How far has she walked over the week? Did she reach her target goal? If not, how much more would she need to walk to reach her target?

Task 6 (independent)

Make flash cards for the 9 times-tables with a partner. Write the equation on one side and the answer on the other. Use the flash-cards to test each other. For any that you don't know instantly, write it out and say it aloud four times.

Put these numbers in order from smallest to largest:

- $\frac{1}{2}$, .49999, 49%
- $\frac{1}{3}$, $\frac{1}{2}$, 93%, .510, .003, 51%
- .2409, .2, 25%, $\frac{1}{4}$, .2000001, $\frac{3}{4}$
- $1\frac{1}{2}$, 1.9, 1.09, 125%, 100%

Write an explanation about the rules you used to order them.

Task 7

Georgia wants to play elastics with her friends. Her mother has a piece of elastic which measures 5.07 metres long. Georgia uses 3.063 metres to make elastics for herself. She wants to make another set for her friend. How much elastic does she have left to make her friend's elastic?

Task 7 (independent)

With a partner, practice your times-tables with the flash cards. For any that you do not know automatically, write them out and say them out loud at least four times.

Represent these on a numberline

.99 + .01 = 1

.909 + .091 = 1

.9009 + .0991 = 1

What patterns do you notice? Continue the pattern you notice three more times.

Represent your reasoning to explain and justify the pattern you notice using the place value house.

Task 8

At her stall at the night market Tupou makes on average $75.95 each night. How much does she make if she has her stall open for 6 nights?

Task 8 (independent)

With a partner, use your flash cards to practice your multiplication facts. Check any that you don't know automatically and discuss patterns that you can use to remember them and then practice saying those out loud to yourself.

Solve the following:

.1 x 2 =

.2 x 2 =

.3 x 2 =

.4 x 2 =

.5 x 2 =

Complete the pattern five more times.

What do you notice? Write an explanation about what you notice.

Task 9

Alani is going to a family reunion in Tuvalu. She has some money saved up. In Tuvalu they use Australian dollars but their own coins. The exchange rate is $1 New Zealand for $.9301 Australian.

How much Australian money will she get in exchange for NZ$10?

How much Australian money will she get in exchange for NZ$100?

How much Australian money will she get in exchange for NZ$550?

Task 9 (independent)

With a partner, practice your times-tables with the flash cards. For any that you do not know automatically, write them out and say them out loud at least four times.

In Samoa the exchange rate is $1 New Zealand for 1.5204 tala.

How much tala will you get in exchange for NZ$10?

How much tala will you get in exchange for NZ$100?

How much tala will you get in exchange for NZ$550?

In Tonga the exchange rate is $1 New Zealand for 1.43976 pa'anga

How much pa'anga will you get in exchange for NZ$10?

How much pa'anga will you get in exchange for NZ$100?

How much pa'anga will you get in exchange for NZ$550?

Task 10

Maui wants to copy part of a pattern from a large siapo. He needs a piece of paper the same size or larger. The part of the pattern he is copying is 1.05cm in width and 1.8cm in length. What is the area of the tile he is copying?

Task 10 (independent)

Write these as decimals:

- 1 and $\frac{5}{10}$
- 12 and $\frac{7}{10}$
- 23 and $\frac{3}{10}$
- 4 and $\frac{83}{100}$
- 1 and $\frac{10}{100}$
- 2 and $\frac{3}{100}$
- 9 and $\frac{831}{1000}$
- 5 and $\frac{83}{1000}$
- 4 and $\frac{1}{1000}$

What is the tenths digit in these?

- 9.92
- 0.02
- 7.816
- 0.30198
- 1.33333
- 1.00009

Which 2 has the biggest value in 0.022? Represent your reasoning to explain your ideas.

How many thousandths are there altogether in 0.022?

Task 11 (optional task)

Whoops! There is a problem with the multiplication of these decimal multiplication.

6.23 x 4 = 25.92

2.36 x 41 = 11.80

Find the mistake and correct them.

Task 11 (independent)

As you solve these, think about their place on the place value chart.

- 32.8 x 6
- 73 x 9
- 1.43 + 1.6
- 4. 0009 + 1.9991
- 6.5 – 1.9
- 12. 32 – 0.31

Identify, record, and explain the pattern you notice in the shifts in place value?

Task 12 (optional task)

Estimate where you think the decimal point goes and then compute to check that you have put it in the right place.

0.24 x 6 = 104

10 x .05 = 50

24 x 0.3 = 720

2.4 x 100 = 240

0.2 x 1 = 20

0.24 x 0.63 = 512

0. 8 x 0.9 = 72

What did you notice?