RICH MATHEMATICAL TASK BOOKLET

NUMBER & ALGEBRA

YEAR 7-8 ODD YEARS

Task Copy Masters

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Task 1

At the Strawberry farm, there are 78 strawberry plants in each row. The Strawberry farm can fit 212 rows on their land. How many strawberry plants are there altogether?

Show your solution using two different representations.

At the Strawberry farm, there are 143 strawberry plants in each row. The Strawberry farm can fit 389 rows on their land. How many strawberry plants are there altogether?

Show your solution using two different representations.

Phase 3:Year 7-8: Number and Algebra (odd year)

Task 1 (independent)

Solve the following equations:

194 × 55 =

176 × 42 =

131 x 329 =

215 x 197 =

Explain what patterns you used to help solve the equations.

Would the patterns always work?

Task 2

The Lottery Foundation has $3818 available for funding for sports team. They have 53 sports team that apply. How much money will each team receive?

What numbers (above a thousand) could you start with, that would mean that each team only receives dollars and no cents?

Task 2 (independent)

Have a go at solving the following tasks involving exponents.

$2^4 = 2 \times 2 \times 2 \times 2 = 16$

4^5

8^4

5^6

7^3

6^8

Check your answer with a calculator.

What patterns do you notice?

Task 3

Pascal sweet factory put 304 sweet packets in each large container ready to be sent for packaging. Each fifteen minutes the machine sorts 6806 packets of sweets. How many containers would be used every fifteen minutes and many packets of sweets would be left over?

For what numbers would there be no packets of sweets left over but almost the same number of containers used?

Task 3 (independent)

Solve the following equations:

678 ÷ 25 =

1469 × 28 =

8575 ÷ 405 =

539 × 637 =

6344 ÷ 28 =

9333 ÷ 322 =

Task 4

Abundant numbers are numbers which are less than the sum of its factors (without itself).

Work in your group to see whether 10 is an abundant number.

Is 48 an abundant number?

Work together to find as many abundant numbers as you can between 0 - 100.

Discuss the patterns that you could use to help you with the task.

Develop a range of conjectures related to abundant numbers and see whether you can prove them.

Task 4 (independent)

People throughout history have always looked for patterns in numbers.

Mathematicians noticed that some numbers are equal to the sum of all of their factors (but not including the number itself). These are called **perfect** numbers.

Another pattern is prime numbers which can only be divided by itself and by 1 without remainders.

On the 100 square use different colours to mark the following: perfect numbers; prime numbers; abundant numbers.

What patterns do you notice?

Phase 3:Year 7-8: Number and Algebra (odd year)

Task 4 (resource)

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Task 5

Can you work together in your group to solve these number sentences? Make sure that you develop an explanation and justification.

167 + 48 = 169 + __

153 – 86 = __ – 76

545 + 78 – __ = 543

__ × 14 = 32 × 7

72 ÷ 12 = (48 ÷ 12) + (__÷ 12)

Task 5 (independent)

Work out which number sentences are true or false and explain your reasoning.

566 + 388 = 564 + 386

73 – 38 = 71 – 36

288 + 16 = 288 + 8 + 9

53 – 27 = 63 – 17

385 = 385

6 × 12 = (6 × 10) + 6 + 6

9 × 7 = (10 × 7) – 7 – 7

8 + 9 + 10 = 11 + 12 + 13 + 14

Find the missing numbers:

58 + 37 = ___ + 39

___ + 436 = 579 + 426

512 – 269 = 412 – __

__ – 346 = 621 – 348

15 × 38 = 38 × 5 × __

378 ÷ 18 = 378 ÷ __ ÷ 3 ÷ 3

Task 6

What are the possible values for $b + b = 14$?

What are possible values for $y + g = 12$?

Now, work together in your group to solve these equations and justify your solution. Make sure that everyone can explain and justify your responses.

$y - 12 = 8$

$15 - c + 4 - c = 9$

$y \times 4 + y - y + 3 = 27$

$8g + 7 = 39$

$12b - 23 = 49$

Task 6 (independent)

Solve the following equations:

$7a = 49$

$y - 14 = 8$

$19 = p - 4$

$32 \div m = 8$

$5f + 6 = 31$

$11r - 18 = 48$

$3q + 7 = 25$

$9d - 5 = 76$

Task 7

Work together in your group to solve these equations and justify your solution. Make sure that everyone can explain and justify your responses.

$8m = 3m + 25$

$4 \times h + 7 \times h = 40 + 26$

$24 = 4v - 16 + v$

$6n + 5 = 29 - n + 3n$

$4j - 6 = 2j + 4$

Task 7 (independent)

Solve the following equations:

$13 + r = 30$

$k - 8 = 14$

$7d = 42$

$6b + 5 = 23$

$4k - 3 = 17$

$42 + 5t = 8t$

$7d + 4 = 2d + 29$

$7k - 13 = 2y + 12$

Task 8

In your groups look at the equations and develop a story that matches the equation. Make sure that everyone in your group can explain and justify why the story matches the equation. Have a go at solving the story problems that you have created:

-20 + 5 = __

__ – -3 = 6

-7 + __ = -11

Task 8 (independent)

Look at the equations and develop one or more stories that match each equation.

-3 + -1 =

- 15 – __ = 11

__ + 24 = 0

-15 – 18 =

Task 9

In your groups represent your reasoning on a number line to show how you solved each of these problems:

-7 + 2 =

-19 – -11 =

-4 – -9 =

-12 + 8 =

6 – 15 =

-12 + -4 =

Task 9 (independent)

Solve these equations (use a blank number line if it helps):

17 + -9 =

- 16 – -24 =

-36 + -16 =

21 – -43 =

-265 – 78 =

-273 + -168 =

-144 – -223 =

Task 10

Tiare is solving a division problem that her teacher gave her.

She is solving this: 352 ÷ 16 =

Tiare solves it by writing 352 ÷ 16 = (160 ÷ 16) + (160 ÷ 16) + (32 ÷ 16)

Do you agree with Tiare's solution? In your group, develop an explanation of why this works or why you think it doesn't work.

Can you develop examples with other numbers which also use this pattern?

Does this pattern work with multiplication?

Task 10 (independent)

Find the missing numbers:

54 x __ = (54 × 5) + (54 × 10) + (54 × 3)

288 ÷ 3 ÷ 2 ÷ __ = 288 ÷ 12

38 × 42 = 38 × 3 × __ × 7

__ ÷ 24 = (240 ÷ 24) + (48 ÷ 2) + (48 ÷ 2)

Task 11

Choose an item of clothing to buy (e.g., a pair of jeans). Use the internet to find the cost of comparable items from different stores or brands.

Estimate how many times you might wear this item. Now calculate the cost per wear, depending on where you choose to buy.

Illustrate the results using a table or spreadsheet.

For each item, write a sentence about the quality of the item and how long you predict it will last in terms of both wear and tear and fashion trends.

How and why did the cost per wear vary between different items of clothing?

Task 11 (independent)

Choose a pair of shoes to buy. Use the internet to find the cost of comparable items from different stores or brands.

Estimate how many times you might wear this item. Now calculate the cost per wear, depending on where you choose to buy.

Illustrate the results using a table or spreadsheet.

For each item, write a sentence about the quality of the item and how long you predict it will last in terms of both wear and tear and fashion trends.

How and why did the cost per wear vary between different brands of shoes?

Task 12

Look at the comparison table below.

	Amazon Prime	Neon	Disney Plus	Netflix
Details	Enjoy exclusive Amazon Originals as well as popular movies and TV shows	Binge the best. Huge range of TV shows and movies handpicked for Kiwis by Kiwis.	Disney Plus. Something for everyone!	Unlimited TV shows, movies and more.
Special offer	7-day free trial	Annual payment of $199.99	Annual payment of $149.99 for standard plan Annual payment of $189.99 for premium plan.	
Pricing	$10.99 per month	$12.99 per month (basic plan) $19.99 per month (standard plan)	$14.99 per month (standard plan) $18.99 per month (premium plan)	$14.99 per month (basic plan) $20.99 per month (standard plan) $27.99 per month (premium plan)
Fine print	Cancel anytime	Cancel before end of billing period. No refunds.	Cancel before end of billing period. No refunds.	Cancel anytime

Use a spreadsheet or table to compare the differing options in relation to monthly and yearly plan costs.

Make at least mathematical statements comparing the pricing of these streaming services.

Use appropriate mathematical and financial language.