

Year 6 Term 1 Week 5 Homework

Student Name: _____	Grade: _____
Date: _____	Score: _____

Table of Contents

5	Year 6 Term 1 Week 5 Homework	1
5.1	Topic 1 — Number Patterns	1
5.2	Topic 2 — Ratio and Rate	2
5.3	Topic 3 — Fractions	3
5.4	Topic 4 — Decimals	4
5.5	Problem Solving Problem Solving (Divisibility by Power of 2)	6
5.6	Test Paper 5	7
5.6.1	Part A — 10 Multiple Choice Questions (1 mark each)	7
5.6.2	Part B — 10 Average Questions (2 marks each)	8
5.6.3	Part C — 10 Extension Questions (3 marks each)	10
5.6.4	Part D — 8 Challenging Questions (5 marks each)	12

Page:	7	8	9	10	11	12	13	14	Total
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5 Year 6 Term 1 Week 5 Homework

5.1 Topic 1 — Number Patterns

Exercise 5.1.1

1. What is the most likely missing number in the following patterns?

(a) 3, 10, 31, 94, _____

(b) 7, 12, 22, 42, _____

(c) 1, 2, 3, 3, 4, 5, 5, 6, 7, 7, _____

(d) 2, 1, $\frac{1}{3}$, $\frac{1}{12}$, _____

(e) $\frac{3}{2}$, $\frac{5}{4}$, $\frac{9}{8}$, $\frac{17}{16}$, _____

(f) $\frac{1}{8}$, $\frac{4}{27}$, $\frac{12}{64}$, _____

(g) 1, 2, 2, 3, 3, 3, 1, 1, 2, 2, 2, 3, 3, 3, 3, 1, 1, _____

(h) 1, 2, 3, 5, 8, 13, 21, _____

2. Consider 1, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{9}$, $\frac{5}{24}$, . . .

(a) Find the 11th number in the pattern. _____

(b) Find the order of $\frac{8}{45}$ _____

3. Using the $1 + 3 = 2 \times 2$, $1 + 3 + 5 = 3 \times 3$, $1 + 3 + 5 + 7 = 4 \times 4$, . . .

Find the sum of $1 + 3 + 5 + \dots + 97 + 99$.

4. The table below lists the patterns of A, B and C.

A	1	2	3	4	5	...
B	1	4	7	10	13	...
C	1	4	9	16	25	...

(a) What number is B when A is 12? _____

(b) What number is C when B is 22? _____

(c) What number is B when C is 225? _____

5.2 Topic 2 — Ratio and Rate**Exercise 5.2.1**

1. The ratio of the length of a rectangle to its breadth is 5 : 3. Find the ratio of its length to its perimeter.

2. The ratio of blue marbles to red marbles was 4 : 3. If 56 blue marbles are taken away, the new ratio became 2 : 3. How many red marbles were there at first?

3. Andrew, David and John have stickers in the ratio of 4 : 5 : 6. If David has 45 stickers, how many more stickers than Andrew does John have?

4. Ray, Jack and William shared some bookmarks in the ratio 3 : 4 : 5. There were 72 bookmarks altogether. How many more than Jack did William receive?

5. Jessica spent $\frac{1}{2}$ of her money on a dress and $\frac{1}{4}$ of the remainder on some books. How much was the dress if the books cost \$30?

6. The area of a square and a rectangle are the same. If the rectangle measures 16 cm by 4 cm, what is the perimeter of the square?

5.3 Topic 3 — Fractions**Exercise 5.3.1**

1. Peter gave $\frac{1}{3}$ of his stamps to his brother and $\frac{3}{8}$ of the remainder to his sister. He put the remainder equally in 8 packets. If each packet contained 20 stamps, how many stamps did he have at first?

2. Parcel A weighs $2\frac{3}{4}$ kg. Parcel B weighs $\frac{2}{3}$ kg more than Parcel A, and Parcel C weighs $\frac{5}{6}$ kg less than Parcel B. Find the weight of Parcel C.

3. $\frac{1}{2}$ of tank A equals $\frac{1}{3}$ of tank B. If tank B can hold 36 L of water more than tank A, how much water can tank B hold?

4. A box contained red and blue beads. $\frac{4}{5}$ of the red beads and $\frac{3}{4}$ of blue beads were used to make a necklace. If 30 beads of each colour were left, what fraction of the beads in the box were used to make the necklace?

5. Taxation takes $\frac{1}{4}$ of John's salary. He banks $\frac{1}{12}$ of what is left. If he banks \$50 every week, how much does he earn each week before tax?

5.4 Topic 4 — Decimals

The decimal number **1234.567** represents:

thousands	hundreds	tens	units	.	tenths	hundredths	thousandths
1	2	3	4	.	5	6	7

this number can be written as: $1 \times 1000 + 2 \times 100 + 3 \times 10 + 4 \times 1 + \frac{5}{10} + \frac{6}{100} + \frac{7}{1000}$

- **Addition and Subtraction of Decimals:** Keep the decimal point in the same place.

- **Multiplication of Decimals:**

The number of decimal places in the product of two decimals is equal to the sum of the number of decimal places in the two numbers being multiplied.

- **Multiplication of Decimals by 10, 100, 1000 etc:**

When multiplying a decimal by 10 or a power of 10, simply move the decimal point to the right the same number of places as the number of zeros after the 1.

$$0.123 \times 10 = 1.23 \quad 0.123 \times 100 = 12.3 \quad 0.123 \times 1000 = 123.$$

- **Division of Decimals by a Whole Number:** $12.5 \div 5 = 2.5$

- **Division of Decimals by a Multiple of 10:**

When dividing a decimal by a multiple of 10, divide it by the digit first and move the decimal point to the left the same number of places as the number of zeros after the 1.

- **Division of Decimals by a Decimal:**

When dividing a decimal by a decimal, multiply both the dividend and the divisor by 10 or a power of 10 so that the divisor is a whole number.

$$\begin{aligned} 0.0234 \div 0.02 &= \frac{0.0234 \times 100}{0.02 \times 100} \\ &= 2.34 \div 2 \\ &= 1.17 \end{aligned}$$

- **Non-Terminating decimals (Recurring Decimals):** When changing a fraction to a decimal, we divide numerator by denominator. If the resulting decimal does not end and keeps on repeating itself, we call it a non-terminating decimal or a recurring decimal.

$$\frac{7}{11} = 0.6363\dots, \quad \frac{1}{3} = 0.3333\dots$$

Exercise 5.4.1

1. Write the following in its simplest fraction form:

(a) 0.070 _____

(b) 8.005 _____

(c) 7.015 _____

(d) 18.25 _____

(e) 51.37 _____

2. Write the following as decimals:

(a) $4 + \frac{9}{10}$ _____

(b) $12\frac{1}{20}$ _____

(c) $5 + \frac{5}{10} + \frac{5}{100} + \frac{1}{500}$ _____

(d) $2 + \frac{1}{20} + \frac{1}{200}$ _____

(e) $12\frac{34}{1000}$ _____

3. Write the value of 2 in each number:

(a) 118.2 _____

(b) 12.34 _____

(c) 51.32 _____

(d) 5.062 _____

(e) 9.002 _____

4. A rectangle is 5.48 cm long and 3.56 cm wide. Find its perimeter.

5. A room is 5.72 metres long and 3.25 metres wide. Find its area.

6. What number is 1000 less than one million?

5.5 Problem Solving Problem Solving (Divisibility by Power of 2)

Number	Divisibility Test (power of 2)
$2 = 2^1$	The number formed by the last 1 digit is divisible by 2
$4 = 2^2$	The number formed by the last 2 digit is divisible by 4
$8 = 2^3$	The number formed by the last 3 digit is divisible by 8
$16 = 2^4$	The number formed by the last 4 digit is divisible by 16

Example 5.5.1 A toy distributor has to pack 234,472 marbles in boxes each contains 8 marbles. Will any marbles be left over?

We could divide 234,473 by 8 to see if there is a remainder. However, there is a different way of answering the question. Since 1000 is divisible by 8 ($1000 \div 8 = 125$).

Let's rewrite the the number of marbles as the following sum: $234,472 = 234 \times 1000 + 472$

We know that 1000 is divisible by 8 so the multiple of 1000 and $472 \div 8 = 59$. Then according to the divisibility principle for sums, the number 234,472 is divisible by 8.

Therefore there will be no marbles left over.

Exercise 5.5.1

1. Can each of the following numbers of marbles be packaged in boxes that each contain 16 marbles with none left over?

(a) 321,600 _____

(b) 523,280 _____

(c) 910,032 _____

(d) 120,130 _____

2. Helsinki Finland was the site of the Summer Olympic games either in 1952 or in 1954. Can you determine which is the correct year without consulting any reference?

3. The pages of a certain book are numbered consecutively from 1 to 1000. How many page numbers have the digit 2 in the units place and are also divisible by 8?

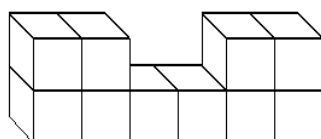
5.6 Test Paper 5**5.6.1 Part A — 10 Multiple Choice Questions (1 mark each)**

1. In 5.432 the value of '2' is _____ . [1]
(a) 0.0002 (b) 0.002 (c) 0.2 (d) 0.02
2. The sum of the value of the digit 5 in 256113, 664512 and 543620 then rounded off to the nearest thousand is _____ . [1]
(a) 556,000 (b) 551,000 (c) 600,000 (d) 550,000
3. 6 metres of ribbon costs \$12.35. Find the cost of 20 m of this ribbon. [1]
(a) \$41.20 (b) \$41.00 (c) \$51.20 (d) \$51.00
4. Find the value of $x^2 + 15 + 3x$ when $x = 9$ [1]
(a) 123 (b) 234 (c) 345 (d) 132
5. There are 80 girls in a hall. 15% of them are blonde hair. How many girls are not blonde haired? [1]
(a) 68 (b) 64 (c) 72 (d) 60
6. What is the missing number in the box? [1]
 $3.28 \times 1000 = \square \div 20$.
(a) 3280 (b) 6560 (c) 164 (d) 65600
7. Find the ratio of 1200g to 1.5 kg. [1]
(a) 4:5 (b) 3:4 (c) 2:5 (d) 3:5
8. Which one of the following has the smallest value? [1]
(a) $\frac{1}{3} + \frac{5}{3}$ (b) $\frac{2}{3} \times 6$ (c) $\frac{1}{2}$ of 8 (d) $8 \div \frac{4}{3}$
9. The product of 34.5 and 2.34 is: [1]
(a) 8.073 (b) 80.73 (c) 807.3 (d) 870.3
10. Express 48 minutes as a ratio of 1 hour 48 minutes. [1]
(a) 2:9 (b) 12:54 (c) 24:56 (d) 4:9

5.6.2 Part B — 10 Average Questions (2 marks each)

11. What is the perimeter of a quarter of a circle with a radius of 14 cm? (given: $\pi = \frac{22}{7}$) [2]

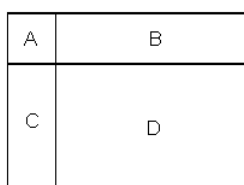
12. The solid below is made up of 3 cm cubes. What is the volume of the solid? [2]



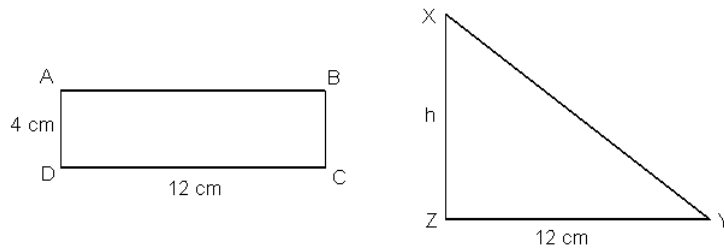
13. John has twice the amount of money of Adam. Ray had $1\frac{1}{2}$ times more than John. If they had \$90 altogether, how much did John have? [2]

14. Benjamin and Daniel both cycled a distance of 60 km. They started at the same time but Daniel completed the journey 30 minutes earlier than Benjamin. If Daniel's average speed was 15 km/h, find Benjamin's speed. [2]

15. In the figure shown below, (not drawn to scale) A, B, C and D are rectangles. The ratios of their areas are given as follows: A:B = 1:4 and A:C = 2:3. Find the ratio of the area of B:D. [2]



16. The rectangle ABCD and triangle XYZ have the same area. What is the height of the triangle? [2]

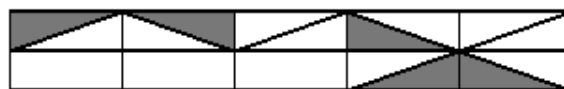


17. Bonnie has 52 stickers. Carol has 15 stickers less than Bonnie. Amy has 15 stickers more than Bonnie. Find the average number of stickers for those three girls. [2]

18. The length of a rectangle is 5 times the breadth. The breadth is p cm. Find its perimeter in terms of p . [2]

19. Leo placed 50 metal balls in a rectangular tank 98 cm long and 65 cm wide. The water level rose up by 10 cm. Find the volume of each metal ball. [2]

20. What is the ratio of the shaded parts to the total number of unshaded parts? [2]



5.6.3 Part C — 10 Extension Questions (3 marks each)

21. Cathy baked x apple tarts on Saturday. She baked 100 more apple tarts on Sunday. She baked a total of 550 apple tarts on the weekend. How many tarts did she bake on Saturday? [3]

22. Ken earns \$1235 before tax each week. He pays 30% of his income for tax. He then uses 10% of his salary to pay bills and 20% of his salary for saving. He gives his wife \$400, then spends the rest of the money for himself. How much does he spend for himself? [3]

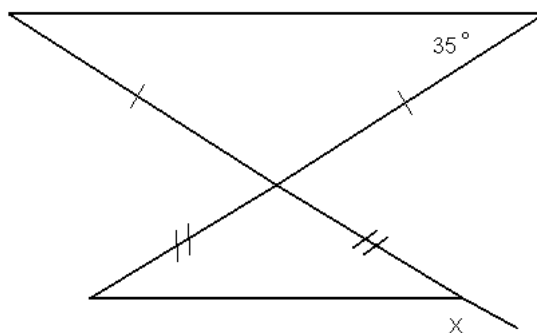
23. Lee has $3p$ oranges in each small carton and $8p$ oranges in each big carton. If $p = 16$, how many oranges are there in 6 small cartons and 8 big cartons? [3]

24. Helen's monthly income is \$2590. She spends \$600 on food, \$140 on transportation and saves the rest. Express her savings as a fraction of her income in its simplest form. [3]

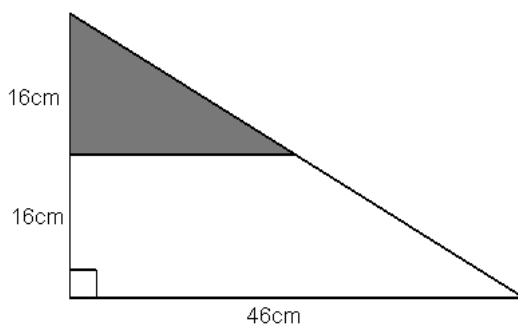
25. Adam has twice as much money as Bob. Carol has \$28 more than Adam. If they have a total of \$288, how much do Adam and Bob have altogether? [3]

26. 162 sweets are shared among 4 children in the ratio 3 : 4 : 5 : 6. Find the difference of the number of sweets between the greatest and the smallest shares. [3]

27. In the figure shown below, find the $\angle X$. [3]



28. In the figure shown below, find the area of the unshaded part. [3]



29. For every 5 crayons which Martin has, Ricky has 12 crayons. How many crayons do they have altogether if Martin has 75 crayons? [3]

30. The ratio of the number of girls and number of boys in a school hall was 12 : 9. If there were 45 less boys than girls, how many children were there in the school hall? [3]

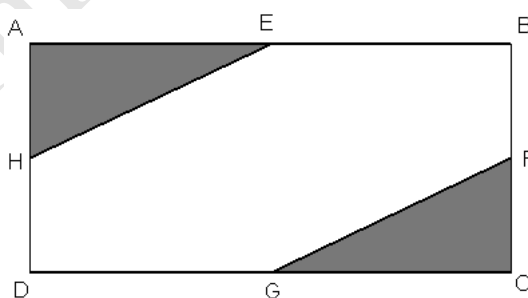
5.6.4 Part D — 8 Challenging Questions (5 marks each)

31. A rainwater tank was $\frac{7}{10}$ full of water. Steven used 1200 L of water for his garden, the tank then became $\frac{2}{5}$ full.

(a) How much water was in the water tank at first? [2]

(b) What was the capacity of the tank? (give your answer in litres). [3]

32. ABCD is a rectangle, and E, F, G, H are midpoints of sides AB, BC, CD and AD respectively. What fraction of the unshaded area is the shaded area? [5]



33. Peter and Mike played a game of marbles with their friends. They started with the same number of marbles. When Peter lost 32 marbles and Mike lost 12 marbles, Peter had two-thirds as many marbles as Mike. How many marbles did each boy have at the beginning? [5]

34. Charles left his house at 8.50 a.m. and cycled at the rate of 18 km/h. He reached Robert's house at 9.10 a.m. His brother left 5 minutes later and reached Robert's house 9 minutes after Charles. At what speed was his brother travelling? [5]

35. The ratio of the number of marbles in box A to the number of marble in box B was 12 : 9. If you take away 20 marbles from box A and put 25 marbles into box B, the two boxes will have the same number of marbles. How many marbles are there altogether? [5]

36. 44% of the audience at a concert are men. The rest are women and children in the ratio of 5:2. If [5] there are 12 more men than women, how many people are there at the concert?

37. A kangaroo chases a rabbit which started 45 m ahead. For every 4 m jump of the kangaroo, the [5] rabbit makes a 2.5 m hop. How many jumps will the kangaroo have to make to catch the rabbit?

38. Crystal took one and a half times as long as Winnie to finish an environmental studies project on [5] 'green power'. If it took 18 hours altogether for them to complete it, how much longer did Crystal take than Winnie in completing the project?
