Year 6 Term 1 Week 2 Homework

Student Name: _____	**Grade**: _____
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2 Year 6 Term 1 Week 2 Homework

2.1 Topic 1 — Numerals

Exercise 2.1.1

1. *Five times the square root of 49 is increased by the quotient of 36 and 9.*

2. *Evaluate* $\frac{3}{8} \times 2.5 - \frac{3}{16} \div 1.5$

3. *Evaluate* $0.5 + 3\frac{1}{2} - 0.25 \times \frac{1}{3}$

4. *Find the value of* $\frac{1}{5\times6} + \frac{1}{6\times7} + \frac{1}{7\times8} + \frac{1}{8\times9} + \frac{1}{9\times10}$

5. *If* $\begin{vmatrix} 1 & \bigstar & 3 \\ 2 & \bigstar & 4 \end{vmatrix} = 1 \times 4 - 2 \times 3$, *then* $\begin{vmatrix} 3 & \bigstar & 5 \\ 4 & \bigstar & 6 \end{vmatrix} - \begin{vmatrix} 2 & \bigstar & 4 \\ 3 & \bigstar & 5 \end{vmatrix}$.

6. *When 5 is multiplied by a fraction, the answer is 0.5 greater than* $\frac{1}{3}$. *What is the fraction?*

7. *Mayan numerals consisted of dots and strokes representing the numbers up to 20. For example: 4 was ● ● ● ●, 5 was* ——— , *8 was* ● ● ● . *Write the number 14 as a Mayan numeral.*

8. *In the expression* $\square\bigstar\triangle$ *the symbol* $\bigstar$ *means 'Double the first number and to the result then add the second number'. For example:* $4 \bigstar 5 = 4 \times 2 + 5 = 13$. *Find the value of* $6 \bigstar 5$.

2.2 Topic 2 — Order of Operations

Exercise 2.2.1

1. *Evaluate the following:*

   (a) $5 + 12 \div (4 + 2) - 3 =$ _____

   (b) $100 - \{80 - [60 - (40 - 20)]\} =$ _____

   (c) $[25 \div (2 + 3)] + 12 =$ _____

   (d) $(3 + 5) \times [21 - (8 + 9)] =$ _____

   (e) $24 \div 3 \times 4 + 6 \times 2 + 8 =$ _____

2. *Find the missing numbers:*

   (a) $200 - (20 + \square) \times \square = 44$ $\square =$ _____

   (b) $23.76 \div (2.8 + \square) + 1.4 = 6.8$ $\square =$ _____

   (c) $(\square - 1.06) \times 0.31 = 2.914$ $\square =$ _____

   (d) $2\frac{2}{5} - \frac{3}{4} \div \frac{1}{\square} = \frac{13}{20}$ $\square =$ _____

   (e) $\left(\square - \frac{3}{4}\right) \div \frac{5}{12} = \frac{3}{10}$ $\square =$ _____

3. *I think of a number, square it, halve it, triple it, divide by 4 and I left with 54. What is the number I first thought of?*

   _____

   _____

4. *If* $A \triangle B = A \times B - A \div B$ *, Find* $4 \triangle 3$*.*

   _____

   _____

5. *If {A, B} =* $A \times 3 + \frac{B}{3}$ *, then { □ , 2 } =* $3\frac{3}{4}$*. Find the missing number.*

   _____

   _____

6. *If* $A \bigstar B = (A \times 2 + B) \times \frac{1}{2}$ *, then* $\square \bigstar \frac{1}{3} = \frac{2}{3}$*. Find the missing number.*

   _____

   _____

2.3 Topic 3 — Number Patterns

1. **Arithmetic Sequence:** A sequence is an arithmetic sequence if the difference between any two consecutive terms is the same constant number.

   For Example: 4, 7, 10, 13, 16, . . . This sequence has a constant difference of 3.

   Exercise 2.3.1 Arithmetic Sequences:

   (a) What is the next number of the sequence? 3, 7, 11, 15, 19, _____

   (b) What is the next number of the sequence? 5.1, 5.4, 5.7, 6.0, 6.3, _____

   (c) What is the next number of the sequence? 3, $3\frac{1}{3}$, $3\frac{2}{3}$, *4 ,* $4\frac{1}{3}$, _____

   (d) For the sequence given below, what is the 20th term of the sequence?
   3, 5, 7, 9, 11, 13 . . . . *Answer:* _____

   (e) Consider the arithmetic sequence given below: 3, 8, 13, 18, 23, ... Which term of the sequence is 108? *Answer:* _____

2. **Geometric Sequence:** The Geometric sequence is obtained by the multiply of a constant non-zero number, which has the same quotient between consecutive terms.

   For Example: 5, 10, 20, 40, 80, 160, 320, ... This sequence has a constant quotient of 2 between consecutive terms.

   Exercise 2.3.2 Geometric Sequences:

   (a) What is the next number of the sequence? 4, 12, 36, 108, _____ *, . . .*

   (b) Find the missing number. 2, 6, 18, _____ *, 162, 486, . . .*

   (c) What is the next number of the sequence? 1000, 500, 250, 125, _____

   (d) Consider the following geometric sequence 5, 15, 45, 135, . . . Which term of the sequence equals 3645? *Answer:* _____

   (e) In a certain geometric sequence, if the first term is 3 and the fifth term is 1875, what is the middle term? *Answer:* _____

2.4 Topic 4 — Ratio and Rate

Exercise 2.4.1

1. *The perimeter of a rectangle is 72 cm. The ratio of its breadth to its length is 1:5. What is the area of the rectangle?*

2. *Linda is 12 years old. The ratio of her age to her sister's is 3 : 5. Find the total age of the girls.*

3. *The ratio of girls and boys in a school hall is 5 : 7. If there are 595 boys in the hall, how many more boys are there than girls?*

4. *The ratio of the number of bookmarks David has to the number of Jason has is 4 : 3. When David gives 25 bookmarks to Jason, he still has 8 bookmarks more than Jason. How many bookmarks does David have at the beginning?*

5. *A motorist covered $\frac{3}{5}$ of a journey in 5 hours at an average speed of 90 km/h. He completed the whole journey at an average speed of 75 km/h.*

   (a) *Find the total distance of the whole journey.*

   (b) *What was the average speed of the last $\frac{2}{5}$ of the journey?*

2.5 Problem Solving (Word Equations)

Exercise 2.5.1

1. *The numbers 2, 3, 7, 8 and 9 are to be placed in the squares A, B, C, D and E to give the correct multiplication. What number is placed in square D?* *Answer:* _____

$$\begin{array}{rcc} & \boxed{A} & \boxed{B} \\ \times & & \boxed{C} \\ \hline & \boxed{D} & \boxed{E} \end{array}$$

2. *The numbers 1, 2, 3, 5 and 8 are to be placed in the squares A, B, C, D and E to give the correct multiplication. What number is placed in square A?* *Answer:* _____

$$\begin{array}{rccc} & \boxed{A} & \boxed{B} \\ \times & & \boxed{4} \\ \hline \boxed{C} & \boxed{D} & \boxed{E} \end{array}$$

3. *The letters A and B represent two different numbers below, What is the difference between letters A and B ?* *Answer:* _____

$$\begin{array}{rccc} & \boxed{A} & \boxed{4} \\ & \boxed{4} & \boxed{A} \\ + & \boxed{A} & \boxed{4} \\ \hline \boxed{B} & \boxed{B} & \boxed{B} \end{array}$$

4. *What value of A must be in the boxes to make the number statement true?*

Answer: _____

$$\frac{\boxed{A} + 3}{\boxed{A} - 2} = \frac{3\times \boxed{A} - 2}{\boxed{A} + 4}$$

2.6 Test Paper 2

Part A —- 10 multiple Choice Questions (1 mark each)

1. Which one of the following numbers is largest? [1]
   (a) 0.8088 (b) 0.8008 (c) 0.0808 (d) 0.8808

2. Which one of the following has the largest value? [1]
   (a) $\frac{1}{2} \times 35$ (b) $\frac{1}{2} \div 35$ (c) $35 \times \frac{1}{2}$ (d) $35 \div \frac{1}{2}$

3. Which of these fractions is equal to $\frac{2}{3}$? [1]
   (a) $\frac{2+1}{3+1}$ (b) $\frac{2-1}{3-1}$ (c) $\frac{2\div5}{3\div5}$ (d) $\frac{2\times2}{3\times3}$

4. What value of A should be written in the box to make a fraction $\frac{15}{\boxed{A}}$ whose value is between 3 and 4? [1]
   (a) 3 (b) 4 (c) 5 (d) 6

5. Select the fraction which is closest to $2\frac{3}{4}$. [1]
   (a) $2\frac{25}{11}$ (b) $\frac{32}{15}$ (c) $\frac{58}{21}$ (d) $\frac{255}{100}$

6. A fraction is added to 0.25, the sum is divided by $\frac{3}{4}$ and the answer is 2. What is the fraction? [1]
   (a) $1\frac{1}{4}$ (b) $\frac{2}{5}$ (c) $1\frac{5}{21}$ (d) $2\frac{5}{12}$

7. The total bus fare for 2 adults and 3 children is $15.00. If the children's fare was $1.56 each, how much is each adult fare? [1]
   (a) $3.56 (b) $8.26 (c) $5.16 (d) $6.16

8. How long will it take Kevin to walk 3 kilometres if he walks 40 metres in 30 seconds? [1]
   (a) 35 minutes (b) 37.5 minutes (c) 2100 seconds (d) 235 minutes

9. Which statement is not true? [1]
   (a) 12 - 8 < 8 - 3 (b) $3 \times 5 = 5 \times 3$ (c) $12 \div 2 = 12 \times \frac{1}{2}$ (d) 15 - 7 > 4×3

10. If $\frac{3}{4}$ of a number is 15, find the number. [1]
    (a) 18 (b) 25 (c) 20 (d) 40

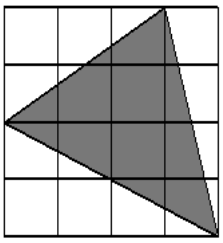
Part B — 10 Average Questions (2 marks each)

11. A baker uses 12 eggs to bake two cakes. Find the number of eggs he needs to bake 21 cakes. [2]

12. The volume of a cube is 343 cm^3. Find the total surface area of four of such cubes. [2]

13. From a $1\frac{3}{4}$ litre kettle, cups containing 250 mL are filled. If 35 cups are fill, how many times did the full kettle boil? [2]

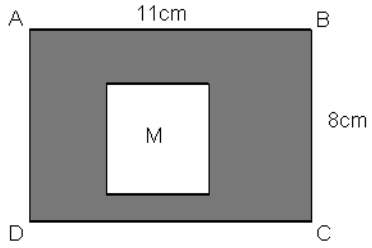
14. Find the area of the shaded triangle if each square represents 1 cm^2 [2]



15. A teacher gives her students half an apple each in the morning and another quarter of an apple each in the afternoon. She has to cut 21 apples to do this. How many students does she have in her class? [2]

16. If $2\frac{1}{4}$ kg of grapes cost \$6.30, find the cost of 500 g. [2]

17. A square M is cut off from a rectangular cardboard, ABCD. The area of the shaded part is 63 cm^2. [2]
Find the perimeter of the square M.



18. Suppose all the counting numbers are written in columns in the pattern shown below: [2]

A	B	C	D	E	F
1	2	3	4	5	6
7	8	9	10	11	12
13	14	15			

Which column does 100 appear?

19. Rebecca has 15 bottles of cooking oil. 2 of them has a capacity of 5 litres each and the rest has a capacity of 2.5 litres each. How much oil does Rebecca have altogether? [2]

20. If △△★ stands for 11 and △★★★ stands for 13, what does △△△★★ stand for? [2]

Part C — 10 Extension Questions (3 marks each)

21. A water tank was $\frac{2}{5}$ full of water. Peter poured 1.5 Litres of water into the tank which then became $\frac{7}{10}$ full. How much water was in the water tank at first? [3]

22. Two cars are travelling towards each other. One is travelling at 60 km/h and the other at 90 km/h. How far apart are they 5 minutes before they meet? [3]

23. 15 books cost an average of \$5.95. If 10 of them cost an average of \$6.15, what is the total cost of the rest of the books? [3]

24. During a clearance sale, Rebecca bought 4 shirts at \$15 each, 3 skirts at \$21 each and 2 pairs of shoes at \$23 each. How much change would she get if she paid the cashier with 4 \$50 notes? [3]

25. $\frac{2}{11}$ of a basket of 132 eggs are bad. If $\frac{1}{3}$ of the remaining eggs are sold, how many good eggs are left? [3]

26. The ratio of the cost of a bottle of orange juice to that of a bottle of soft drink is 5 : 3. If the bottle of orange juice costs \$1.50 more, what is the average cost of 5 bottles of orange juice and 5 bottles of soft drink? [3]

27. Bob spends 60% of his pocket money every week and saves the rest. How much will he spend in 3 weeks if he saves \$16.40 in 2 weeks? [3]

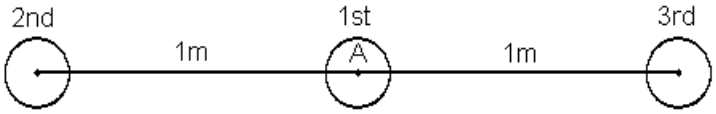
28. A worker was paid at the rate of \$16.5 per hour. How much would 12 such workers be paid for 8 hours of work for 4 weeks? [Note: Each week contains five working days.] [3]

29. Jessica has some 10c , 20c and 50 c coins in her piggy bank. Altogether she has 14 coins, and the total value of the coins is \$3. If she has more 10c than 20c coins and more 20c than 50c coins, how many 50c coins does she have? [3]

30. The ratio of the perimeter of a rectangle to that of a square is 11:4. If one side of the square is 5cm, find the total perimeter of the 2 figures. [3]

Part D — 8 Challenging Questions (5 marks each)

31. Farmer John is going to grow a row of carrots. He plants the first carrot at the point A, then plants the next carrot one metre to the left of point A and then plants the next carrot one metre to the right of A. The fourth carrot will be planted 2 metre to the left of A and so on.



(a) Where will John plant his 100th carrot? [1]

(b) What is the distance between the 99th carrot and the 100th carrot? [2]

(c) Assuming that John has been walking around to plant every carrot, by the time John has planted the 100th carrot, how far has he walked? [2]

32. The average weight of Lee and Joe is 58.5 kg. The average weight of Lee and Jack is 56 kg. If Lee is 2.8 kg heavier than Jack, what is Joe's weight? [5]

33. After a birthday party, Jason, Jessica and Stephanie shared some lollipops in the ratio 3 : 6 : 8 respectively. If Jason and Jessica have 45 lollipops in all, how many lollipops has Stephanie more than Jason? [5]

34. Daniel has three different sizes of marble collections. 75% of the marbles are medium-sized. The rest are large and small in the ratio of 2 : 3 respectively. There are 200 more small marbles than large marbles. How many more medium-sized marbles than small ones are there in Daniel's collections? [5]

35. A dining table and 8 chairs cost \$2,500. The dining table and 6 chairs cost \$2,250.

    (a) Find the cost of 12 such chairs. [3]

    (b) Find the cost of two dining tables. [2]

36. Town A is 416 km from Town B. Johnson travelled from town A at an average speed of 84 km/h for $2\frac{2}{3}$ hours. He then decreased his speed by 20 km/h for the rest of the journey.

    (a) How long did he take to complete the whole journey? [2]

    (b) What was his average speed for the whole journey? [3]

37. The ratio of the number of female spectators to the number of male spectators in a New Year event was 7 : 10. When 240 male spectators jointed in later, there was 20% increased in the number of male spectators. What is the total number of spectators in the New Year event after the increase? [5]

38. Ken's salary in 2006 was \$52,000. He saved 25% of the salary and spent the rest. The following year in 2007, his salary increased by 15% but his expenditure went up by 5%. How much less did Ken save in 2007? [5]