

Year 6 Term 1 Week 9 Homework

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

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Page:	7	8	9	10	11	12	13	Total
Marks:	10	10	10	15	15	20	20	100
Score:								

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9 Year 6 Term 1 Week 9 Homework

9.1 Topic 1 — Averaging

Exercise 9.1.1

1. The average of six numbers is 7. If two of the six numbers are removed, the average of the remaining numbers is 6. What is the sum of the two numbers which were removed?

2. There were six of us in the class. The teacher said that if the average of our marks was 55 or more, we wouldn't get any homework for a week. On the day of the test, John was absent. The 5 of us got an average of 52. How much would John have to score in order to bring the class average up to 55?

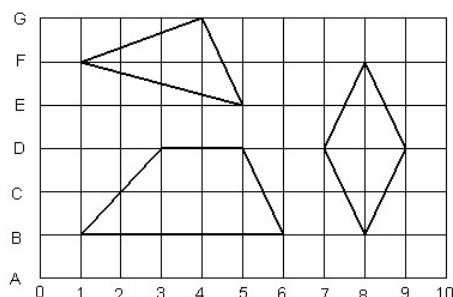
3. I make \$7 per hour at my job. I would like to make an extra \$36 on my 9 hours shift. What would my rate, in dollars per hour, have to be in order to achieve this?

4. A quadrilateral has sides equal to 4.5 cm, 6.7 cm, 7.8 cm and 8.9 cm. What is the difference between the average of the larger two sides and the average of the smaller two sides?

9.2 Topic 2 — Space and Graphs

Exercise 9.2.1

1. List the co-ordinates at the corners of:



(a) The triangle _____

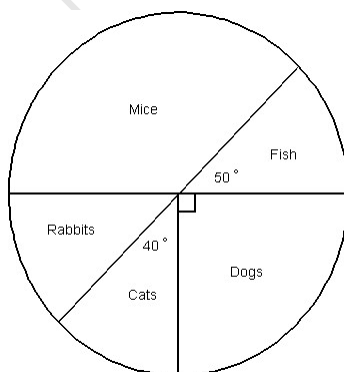
(b) The trapezium _____

(c) The rhombus _____

(d) What shape would this make? $(1, D)$, $(4, D)$, $(4, A)$ and $(1, A)$ _____

(e) What shape would this make? $(1, C)$, $(4, E)$, and $(5, B)$ _____

2. The graph represents the creatures in a pet shop. There are 36 dogs for sale.



(a) How many cats are there? _____

(b) How many rabbits are there for sale? _____

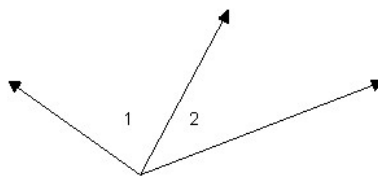
(c) What fraction of the pets are mice? _____

(d) How many more mice than cats? _____

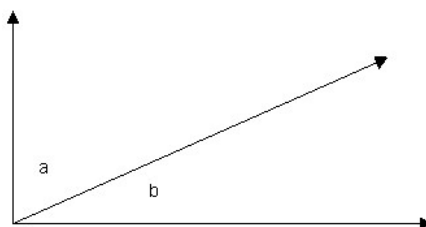
(e) How many animals are there altogether? _____

9.3 Topic 3 — Geometry (angles)

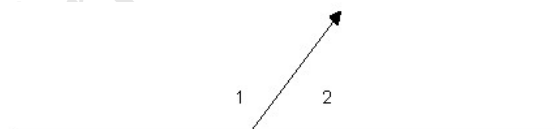
- **Adjacent Angles:** Two angles in a plane which share a common vertex and a common side but do not overlap. Angles 1 and 2 below are adjacent angles.



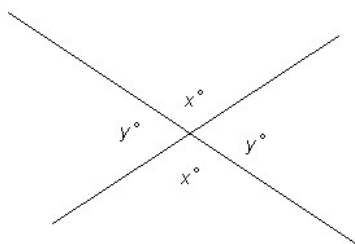
- **Complementary Angles:** 2 adjacent angles which add up to 90° as shown below.



- **Supplementary Angles:** 2 adjacent angles which add up to 180° as shown below:

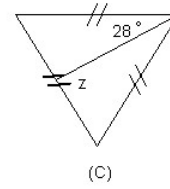
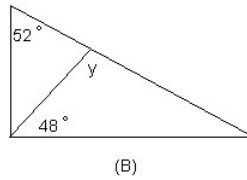
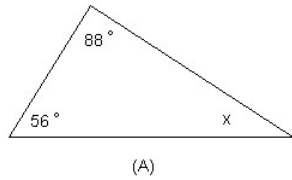


- **Vertical Opposite Angles:** When 2 straight lines cross, two pairs of vertical opposite angles are formed. **Vertically opposite angles are equal.**



Exercise 9.3.1

1. Find the value of the pronumerals: $x =$ _____, $y =$ _____, $z =$ _____

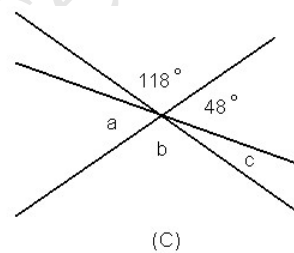
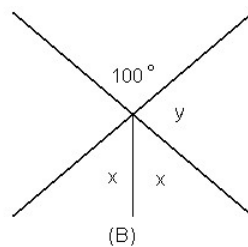
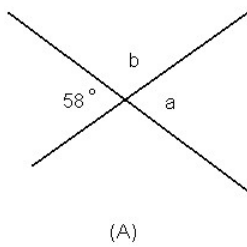


2. Find the value of the pronumerals:

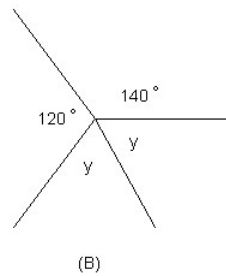
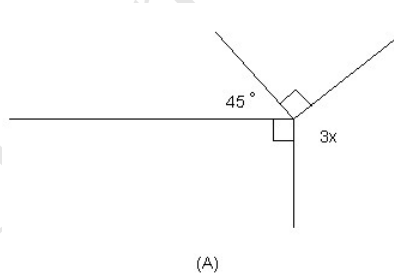
(a) $a =$ _____, $b =$ _____;

(b) $x =$ _____, $y =$ _____;

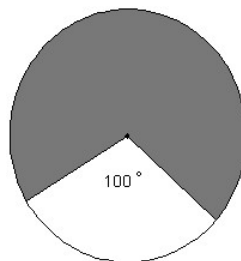
(c) $a =$ _____, $b =$ _____, $c =$ _____;



3. Find the value of the pronumerals: $x =$ _____, $y =$ _____



4. The area of the shaded part is 2600 cm^2 . Find the area of the circle. _____



9.4 Topic 4 — Algebra and Equations

- **Like Terms:** Like terms are those which have the same pronumeral or pronumeral parts. For Example $3x$, $6x$ and $-12x$ are like terms.
- Also $2xy$, $5xy$ and $-12xy$ are like terms.
- **Collecting Like Terms:** When adding or subtracting pronumerals only like terms can be added or subtracted.
- **Indices Notation:** $a \times a$ is written as a^2 , $a \times a \times a$ is written as a^3 ($a^m \times a^n = a^{m+n}$).

Exercise 9.4.1

1. If $a = -2$, $b = 5$ and $c = 2$, evaluate the following expressions:

(a) $abc =$ _____

(b) $2a^2b + 3c =$ _____

(c) $(a + b)(a - b) =$ _____

(d) $a^2 - b^2 =$ _____

(e) $a(b + c) + b(c + a) =$ _____

2. Simplify the following expressions:

(a) $-3y \times 2x =$ _____

(b) $24y^2 \div -4y =$ _____

(c) $-2xy \times 4y =$ _____

(d) $3x \times 6xy^2 =$ _____

(e) $5x \times (-2x) \times (-6y) =$ _____

3. Solve the following equations:

(a) $7x - 3 = 5x + 11$ _____

(b) $4y - 3 = 7y + 6$ _____

(c) $7x + 12 = 8x + 15$ _____

(d) $x - 12 = 5x - 4$ _____

(e) $3y - 1 = 5 - 3y$ _____

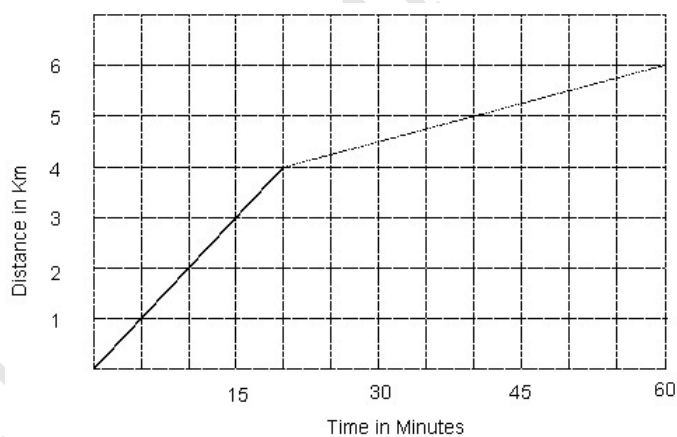
9.5 Problem Solving — (Tricky Problems)

Exercise 9.5.1

1. A paper boat put on a flowing river reached a point 4.5 km away in $\frac{1}{2}$ an hour. Find the rate at which the river was flowing in metres per second.

2. Between Berry Creek and Kiama is a distance of 21 km. On the way it takes 4 hours 12 minutes to walk this distance but on the way back we rode bikes at an average speed of 15 km/h. What was our average speed for the entire trip?

3. John rode his bike to his friend's place and from there the 2 boys walked to the beach.



- (a) What was their walking speed in km/h?

- (b) What was John's average speed for the whole trip?

9.6 Test Paper 9**9.6.1 Part A — 10 Multiple Choice Questions (1 mark each)**

1. What is the sum of the number of vertices and edges of a rectangular pyramid? [1]
(a) 11 (b) 12 (c) 13 (d) 14
2. $3.21 \text{ kg} = \square \text{ mg}$. What is the value of \square ? [1]
(a) 3210 (b) 32100 (c) 321000 (d) 3210000
3. Only one of the following equals 8. Which is it? [1]
(a) $7 \times 7 + 7 \div 7$ (b) $(7 \times 7 + 7) \div 7$
(c) $7 \times (7 + 7) \div 7$ (d) $7 \times (7 + 7 \div 7)$
4. The most likely missing number in the following series would be: $\frac{1}{3}, \frac{1}{6}, \frac{1}{12}, \square, \frac{1}{48}, \dots$ [1]
(a) $\frac{1}{16}$ (b) $\frac{1}{20}$ (c) $\frac{1}{24}$ (d) $\frac{1}{32}$
5. Express 2.45 as a mixed number. [1]
(a) $2\frac{9}{20}$ (b) $2\frac{9}{25}$ (c) $2\frac{9}{50}$ (d) $2\frac{9}{100}$
6. What is the lowest common multiple (LCM) of 4, 9 and 10. [1]
(a) 90 (b) 180 (c) 280 (d) 360
7. Which numerical statement correctly describes the statement "Four times the sum of five and the product of two and six is decreased by three"? [1]
(a) $4 \times (5 + 2 \times 6) - 3$ (b) $4 \times 5 + 2 \times 6 - 3$
(c) $4 \times (5 + 2) \times 6 - 3$ (d) $4 \times (5 + 2 \times 6 - 3)$
8. The obtuse angle between the directions North and South East is: [1]
(a) 315° (b) 145° (c) 135° (d) 225°
9. The number 153 has the strange property that $153 = 1^3 + 5^3 + 3^3$. Which of the following numbers [1]
has the same property?
(a) 154 (b) 163 (c) 136 (d) 407
10. 18km/h is equivalent to : [1]
(a) 18 m/s (b) 30 m/s (c) 5 m/s (d) 6 m/s

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

11. A sum of money is divided equally among a group of 24 people and they each get \$24. How much [2]
will each person get if 8 more people join the group and share the same amount of money?

12. A book costs \$5. One free copy is given to a customer as a gift for every 4 of these books purchased. [2]
If Amy spends \$35 on buying these books, how many books will she get altogether?

13. One tap could fill a bucket in 3 minutes. Another tap could fill the same bucket in 4 minutes. How [2]
long would it take to fill the bucket if both taps were used?

14. The product of three consecutive numbers is 210. Find the sum of the three numbers. [2]

15. A piece of rope $1\frac{3}{5}$ metres long was cut into 8 equal pieces. What was the length of each piece? [2]

16. 24% of the people in a room are men, 36% of them are women and the rest are children. What [2]
percentage of them are children?

17. If 8% of the water in a tank is 46 litres, how much water is in the tank? [2]

18. Seven years ago a man was twice as old as his brother. If his brother is now 15 years old, how old is [2]
the man?

19. Divide \$288 so that Alice gets three times what Emma gets. How much does Alice get? [2]

20. The sum of the ages of two sisters is 56 years and the difference in their ages is $\frac{1}{7}$ of the sum. Find [2]
the age of the older sister.

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

21. When a certain amount of money is shared between seven people, six of them receive equal shares [3] and the seventh receives \$6 more. What could be the original amount of money?

22. If 48 is added to one-third of a number, the triple of the number is the result. What is the number? [3]

23. The quotient of two numbers is 4 and their difference is 39. What is the sum of these two numbers? [3]

24. Twelve men on a desert island have enough food for 26 days. How many days should the same food [3] last 13 men?

25. The sum of the height of Ken and Ben is 212 cm. Ken is 6 cm shorter than Ben. How tall is Ben? [3]

26. In sharing \$240 with Steven, Bill gets one third. How much must Steven give Bill in order that they will have the same amount? [3]

27. 6, 14 and 15 are factors of a natural number N. What is the smallest value that N can have? [3]

28. Bob, Tom and John shared \$72. Bob received three times as much as Tom who received the same amount as John. How much money did John receive? [3]

29. A rectangular garden measuring 12 metres by 8 metres is surrounded by a path one metre wide. What is the garden path area? [3]

30. A class of 26 students decide to put in \$1.50 each in order to buy a certain present for their teacher. If 6 students forget to bring the money, how much more will each of the remaining students have to contribute so as to buy this present? [3]

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

31. A man is rowing downstream from town A to town B 14 km away. If the stream is flowing at 4km/h [5] and the man can row at 3km/h in still water, how long will he take?

32. John bought 3 phones and 2 radios for a total of \$1300. The price of a radio was $\frac{2}{3}$ that of the phone. [5] Find the cost of each radio.

33. Five brothers each born in a different year, share a gift of \$200 according to the following arrangement: each boy except the youngest, gets \$10 more than his next younger brother. How much does the eldest boy get? [5]

34. The cost of sunglasses and a case for them is \$12. If the sunglasses cost \$9 more than the case, what is the cost of the case? [5]

35. A school has 90 children, during the day, each child attends 4 classes. Each class has 15 children [5] and one teacher. During the day, each teacher teaches 3 classes. What is the smallest number of teachers the school can have?

36. $7^1 = 7$, $7^2 = 49$, $7^3 = 343$, and so forth. When multiplied out, 7^2 has a units digit of 9, 7^3 has a [5] units digit of 3, and so forth. What is the units digit of 7^{18} ?

37. The sum of Alice, Emma, and Bonnie's ages is 25 years. Emma is 3 years younger than Alice and [5] Bonnie is 5 years younger than Emma. What is Alice's age?

38. There are twice as many litres of water in one container as in another. If 12 litres of water are [5] removed from each of the two containers, there will be three times as many litres of water in one container as in the other. How many litres of water did both containers have altogether at the beginning?
