

Nelson Maths 9 for the CSF II

Homework and Assessment Sheets

Ratios and rates

NU 9-7

Name: _____ Class: _____

Due date: _____ Parent's signature: _____

| Level 5 | | | | | /10 | | | | | Level 6 | | | | | /20 | | | | |
|---------|--|--|--|--|-----|--|--|--|--|---------|--|--|--|--|-----|--|--|--|--|
| | | | | | | | | | | | | | | | | | | | |

Part A: Level 5

Express each of these ratios in simplest form.

1 $120:30 =$ _____

2 $0.9:18 =$ _____

Janelle went on a bicycle tour which consisted of three stages:

Stage A: 20 km in 2 hours Stage B: 45 km in 3 hours Stage C: 10 km in 0.5 hours

3 Calculate her rate of travel in km/h for each stage: A _____ B _____ C _____

4 How long would it take her to travel a distance of 50 km at 15 km/h? _____

Five different strength cordials, A, B, C, D and E, are made using syrup and water:

A 1 syrup : 5 water

B 3 syrup : 10 water

C 2 syrup : 20 water

D 0.5 syrup : 10 water

E 5 syrup : 15 water

5 Which cordial has the highest ratio of water : syrup? _____

6 Which cordial would taste the strongest? _____

List the cordials from highest to lowest as their syrup : water ratios.

| | | Highest | | | | Lowest | |
|---|----------------|---------|--|--|--|--------|--|
| 7 | Cordial (A-E) | | | | | | |
| 8 | Simplest ratio | | | | | | |

A piece of rope is 9 m in length.

9 What lengths are obtained by cutting it in the ratio 2 : 1? _____

10 Into how many 0.75 m pieces can it be cut? _____

Part B: Level 6

Complete the table of information about scale drawings. State if each is an enlargement or a reduction.

| | Object | Scale drawing | Scale ratio or scale factor | Enlargement or reduction? |
|---|--------|---------------|-----------------------------|---------------------------|
| 1 | 20 cm | | 1:20 | |
| 2 | 1 m | 1 cm | | |
| 3 | | 20 cm | 40:1 | |

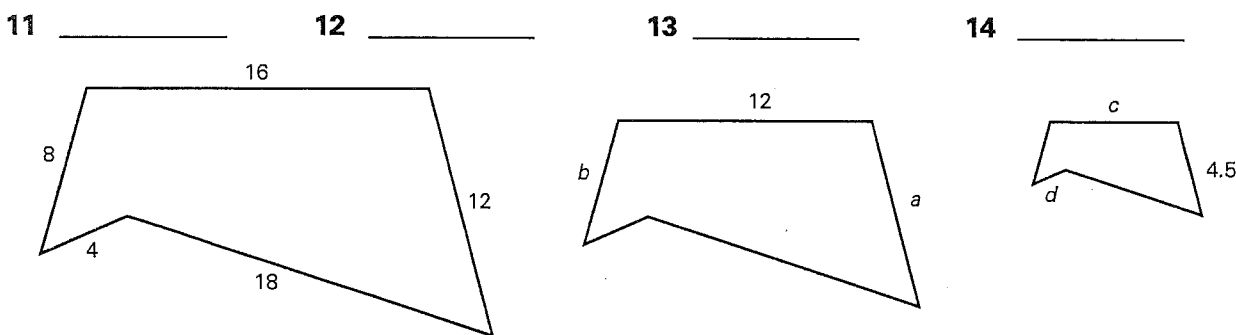
Three junior employees earn wages in the ratio 5 : 3 : 2; the oldest receives the most, the youngest least.

- 4 If the oldest gets \$10, what would the youngest get? _____
- 5 If they received \$100 between them, what would each get? _____, _____, _____
- 6 If the middle one gets \$15, how much would the oldest and youngest receive? _____, _____

Calculate the heart rates in order to insert the correct sign (=, > or <) in these statements.

- 7 880 beats in 10 minutes _____ 688 beats in 8 minutes
- 8 65 beats / min _____ 990 beats in 15 minutes
- 9 4560 beats / h _____ 1520 beats in 20 minutes
- 10 Convert 75 km / h into km / s _____

The quadrilaterals below are exactly in proportion. What are the values of *a*, *b*, *c* and *d*?



Circle the fastest growth rate in each pair.

- 15 100 cm in 5 years or 2.5 m in 20 years
- 16 36 mm in 15 min or 1 m in 2 hours
- 17 140 km in 2 hours or 12 km in 10 min

Divide each of the following lengths into the ratio indicated in the bracket.

- 18 55 m (10 : 1) _____
- 19 72 m (5 : 4) _____
- 20 At a football match, the ratio of Essendon to Carlton fans was 7 : 5. There were 96 000 at the ground. How many supported Essendon? _____

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Three girls in a family receive pocket money in 1999 according to their age ratio 4 : 3 : 1 when the oldest was 8 years old and received \$8. Every 2 years their money is doubled, but kept in the same ratio.

In what year will the middle child's pocket money be three times what the oldest received in 1999?

Vocabulary

Write the mathematical meanings of:

- Rate _____
- Speed _____