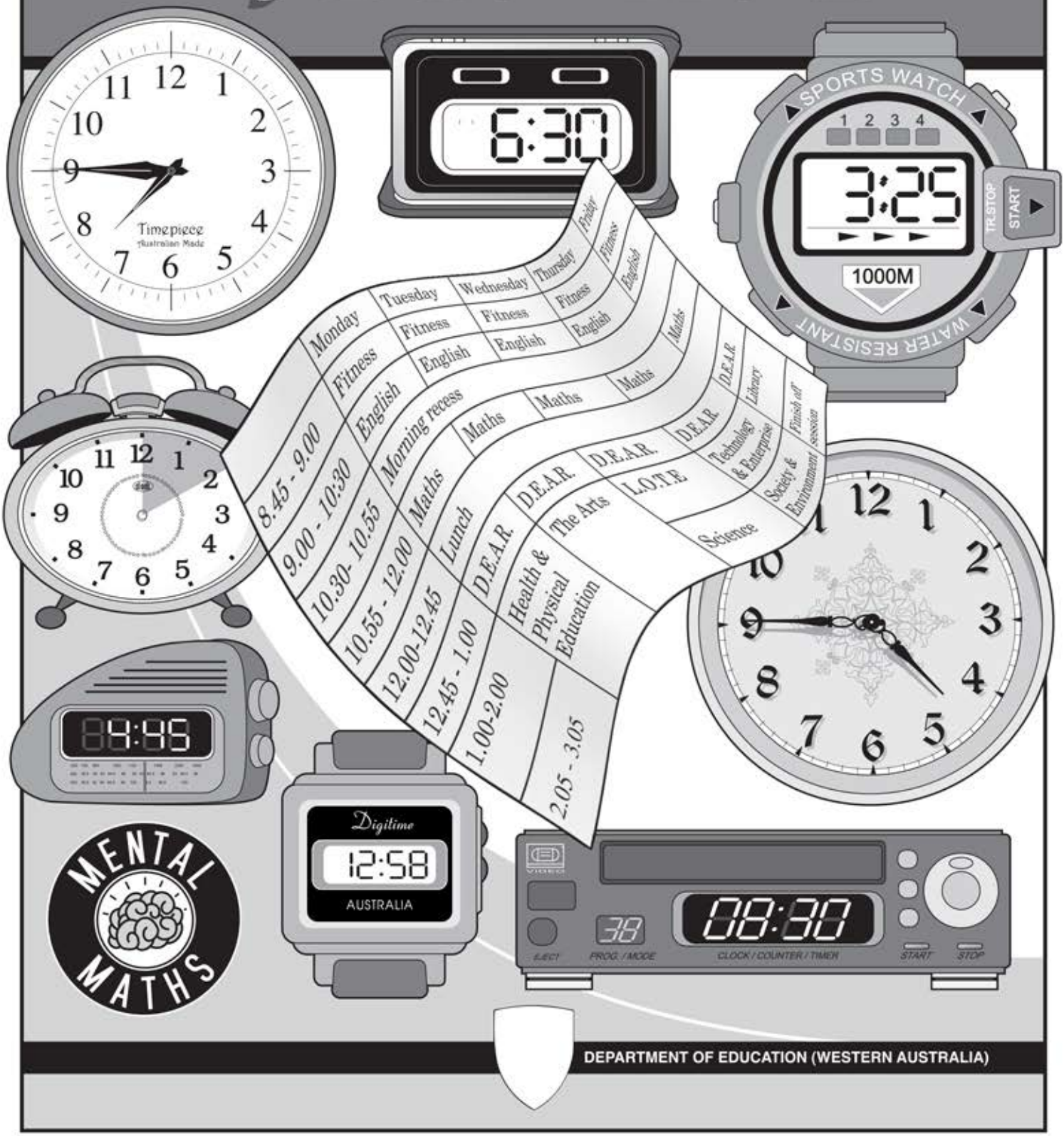
YEAR 6 MATHEMATICS

MENTAL WORKBOOK

A day in your life

Task 5



	Monday	Tuesday	Wednesday	Thursday	Friday
8.45 - 9.00	Fitness	Fitness	Fitness	Fitness	Fitness
9.00 - 10.30	English	English	English	English	English
10.30- 10.55	Morning recess				
10.55 - 12.00	Maths	Maths	Maths	Maths	Maths
12.00-12.45	Lunch				
12.45 - 1.00	D.E.A.R.	D.E.A.R.	D.E.A.R.	D.E.A.R.	D.E.A.R.
1.00-2.00	Health & Physical Education	The Arts	L.O.T.E.	Technology & Enterprise	Library
2.05 - 3.05			Science	Society & Environment	Finish off session

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Introduction

- There is one mental maths activity sheet per day.
- Spend 10–15 minutes at the beginning of each maths lesson on mental maths. Get as much of each day's activity done as possible. If all mental is not finished, leave it. Your teacher will review the amount you have completed. If you finish working on the task early you can come back to unfinished mental.
- Start a new activity each day.
- The mental activities revise and consolidate various mathematical processes and strategies. Home tutors should encourage students to use different strategies to solve problems rather than just focusing on answers being correct.
- Complete all activities in the space provided. If additional space is needed, use lined paper ruled with a margin, include your name, date and activity. Number activities clearly and attach them to the appropriate mental activity sheet.
- Include your mental sheets with all other work when you send it in to the teacher.

1 To help you tell the time you need to know some time facts.

Complete these.

_____ hours in a day

_____ minutes in an hour

_____ minutes in half an hour

_____ minutes in quarter of an hour

_____ seconds in a minute

_____ seconds in 3 minutes

_____ days in a week

_____ weeks in a year

If students are not sure of the answers, they could check the meaning of the terms hour, minute, second and year in a dictionary, or search the Internet, or ask a family member.

2 Estimate how long you think each of the following activities will take. Use the stopwatch in the kit to time yourself completing each activity. Record your findings in the table below.

Activity	Estimation	Actual time taken
Write your first name 7 times.		
Write out the 4 times table.		
Complete 10 star jumps.		
Get a drink of water		

Were your estimations close?

_____

Keep practising estimation wherever possible. It's a useful math strategy in many situations.

3 You just completed an activity which required you to use estimation skills.

a) List situations where you have used estimation to help calculate. Ask friends, family members or your home tutor to give different ideas.

_____

_____

_____

_____

b) Explain how you know if your estimations are close enough to the answer.

_____

_____

_____

_____

4 Magic squares

The numbers on vertical, horizontal and diagonal lines in magic squares must all add up to the same amount. For example 2, 9 and 4 add to 15, so all the other lines must also equal 15.

Complete these magic squares.

2	9	4
		8

16		12
	13	17
		10

22		23
	20	19
	25	18

15		
20		
19		21

Describe how you solved these. What strategies did you use?

Challenge

Look at the grid below.

9	*72*	*56*
21	*7*	*3*
63	*24*	*8*

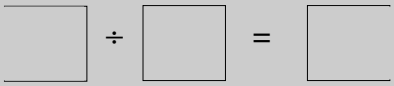
Each number in the grid is surrounded by two, three or four lines.

The lines can be used as a code to write some number sentences.

For example, where you see this  , write the number 9.

Where you see this  , write the number 7.

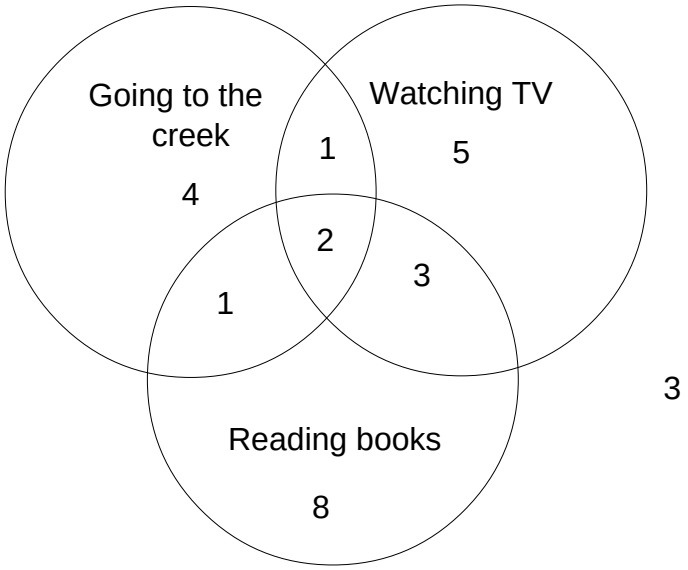
The grid could be used to write number sentences. One has been done for you.



21 ÷ 7 = 3

Write 3 number sentences of your own using the code. Be sure to write the solution.

1 A class of students were recently asked to name their favourite leisure activities. The survey results are shown on the Venn diagram below.



a) What would be a suitable title for this Venn diagram?

_____

b) How many students enjoy watching television only? _____

c) How many students enjoy going to the creek only? _____

d) How many students enjoy reading and going to the creek only? _____

e) How many students enjoy all three leisure activities? _____

f) How many students do not enjoy any of these leisure activities? _____

g) Total number of students in the class is _____

2 Convert these seconds to minutes. (There are 60 seconds in 1 minute).

a) 60 seconds = _____ minute _____ seconds

b) 94 seconds = _____ minute _____ seconds

c) 110 seconds = _____ minute _____ seconds

d) 148 seconds = _____ minutes _____ seconds

e) 187 seconds = _____minutes _____ seconds

3 Convert these minutes to hours and minutes. (There are 60 minutes in 1 hour).

a) 60 minutes = _____ hour _____ minutes

b) 82 minutes = _____ hour _____ minutes

c) 99 minutes = _____ hour _____ minutes

d) 140 minutes = _____ hours _____ minutes

e) 206 minutes = _____ hours _____ minutes

4 Convert these hours to days. (There are 24 hours in 1 day).

a) 24 hours = _____ day

b) 48 hours = _____ days

c) 96 hours = _____ days

d) 72 hours = _____ days

5 Convert these.

1 min= _____ secs

1 hour =_____ mins or _____ secs

1 day = _____ hours or _____ mins or _____ secs

1 week = _____ days or _____ hours or _____ mins or _____ secs

1 leap year = _____ months or_____ weeks or _____ days or _____ hours

Challenge

A student on a farm has dogs and birds.

There are 15 heads and 50 legs between them. How many dogs are there? _____

Product' means the same as multiply or times. To find the product students need to multiply the numbers shown on the dice.

'Sum' means the total or whole amount. To find the sum, students need to add the numbers shown on each face of the dice.

1 Take the 3 dice from the kit. Roll them five times.
Find the sum and the product of the numbers after each roll.
Record your findings in the table below.

Roll of the die	**Total**	**Product**
eg 6, 4, 2	6 + 4 + 2 = 12	6 × 4 × 2 = 48

2 Complete these mentally. Show how you worked them out.

a) If you buy 5 pairs of socks and each pair costs $2·95, what is the total cost? _____

b) Add these numbers: 9, 9, 19, 19

What is the total? _____

What is an easy way to add these numbers?

_____

c) A recipe requires 250g of sugar. How much sugar is required for 5 recipes? _____

d) To share $25 between 4 people, how much does each person receive? _____

e) 364 – 198 = _____

f) 4 × 14 = _____

3 How long is a minute?

Experiment with your stopwatch to see if you can work out how long a minute is.

Start the stopwatch. Without looking, stop when you think one minute has passed.

Write the actual time. Do this for 3 trials. Each time try to improve on your estimations. Complete the table below. Record the estimation and the actual time for the 3 trials.

Start time	**Stop time**
0:00:00	_____
_____	_____
_____	_____

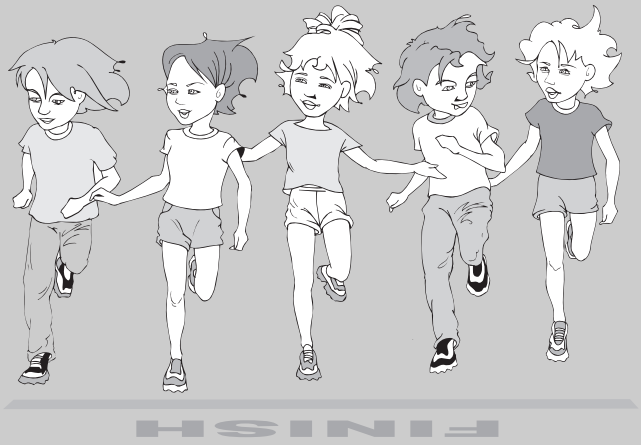
Did you get a better understanding of how long a minute is?

4 Think of the numbers 20, 30 and 105.

What prime number is a common factor of each of these numbers?_____

Numbers which have only 2 factors, 1 and itself are prime numbers.
For example, 17 is a prime number. The factors are 1 and 17 (itself).

Challenge



In a race, Jolise came first.

Marlene came last.

Yolanda finished ahead of Xaviour but just behind Wesley.

Who came third? _____

Who came fourth? _____

How many students were in the race? _____

1 Complete these. The first one has been done for you.

	16	24	18	8	52	19	30	42	100
+ 6	22								

	4	9	8	6	3	12	7	5	100
× 7	28								

2 A basketball match takes 3 hours 25 minutes.

Write 3 possible starting and finishing times.

Start: _____ Finish: _____

Start: _____ Finish: _____

Start: _____ Finish: _____

3 Solve these mentally. Show the numbers you would multiply first to make the calculation easier to do.

a) $4 \times 2 \times 5 =$ _____

b) $7 \times 4 \times 5 =$ _____

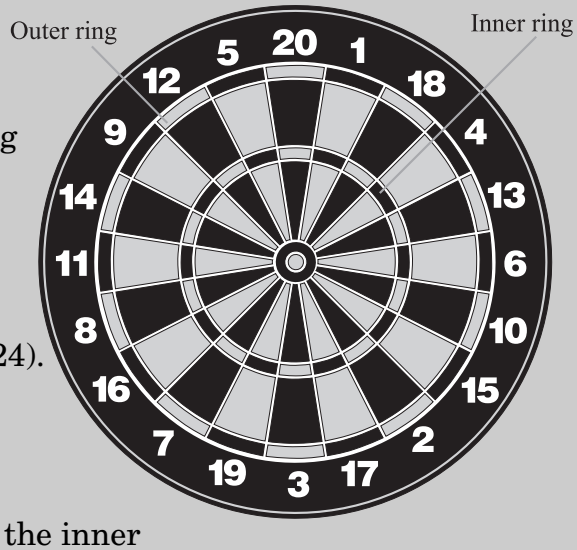
c) $6 \times 3 \times 5 =$ _____

d) $5 \times 7 \times 8 =$ _____

4 Order these measurements from shortest to longest. Number them 1 (shortest) to 4 (longest). The first one has been done for you.

a)	39 cm (3)	320 cm (4)	2 cm (1)	25 cm (2)
b)	1 100 mm	72 mm	316 mm	8 mm
c)	12·3 cm	946 mm	346 mm	3 cm
d)	85 kg	1 089 g	1·25 kg	409 g
e)	1·36 km	1 350 m	9·25 km	922 m

Challenge



On a dartboard, any dart that lands in the outer ring is worth double that number.

For example, if it lands in the outer ring of 12 you score double 12 (which is 24).

The inner ring is worth treble the number.

For example, if it lands in the inner ring of 8 you score treble 8 (which is 24).

List the scores from 1–48 you can obtain using only 1 dart.

_____

_____

List which scores are impossible.

_____

_____

1 a) Estimate how long you think it will take to complete the number sentences below.

This activity enables students to practise estimating and the four operations. (×,–, ÷, +)

Estimate: _____ minutes _____ seconds

a) 17 + 19 = _____
b) _____+ 8 = 51
c) 6 + 121 = _____
d) _____ ×7 = 28
e) 3 × 5 = _____
f) 27 ÷ 3 = _____
g) 108 ÷ _____ = 9
h) 100 – 36 = _____
i) 802 – _____ = 722
j) 0 × 76 = _____

b) Complete the number sentences. Use a calculator when you cannot solve them mentally. Write the letter 'M' next to the ones you solved mentally.

Use the stopwatch in the kit to record the actual time it took.

Actual time: _____ minutes _____ seconds

Was your estimation close?

For b), students need to think about how many weeks in a year. For c), students need to think about how many hours in a day. For d), think about how many seconds in a minute. For e) think about how many hours in a week.

2 Answer the following. One has been done for you.

What fraction of a week is 3 days? $\frac{3}{7}$ (3 days out of 7 days in a week)

a) What fraction of a week is 6 days? _____
b) What fraction of a year is 7 weeks? _____
c) What fraction of a day is 2 hours? _____
d) What fraction of a minute is 11 seconds ? _____
e) What fraction of a week is 9 hours?

3 The time is 3:25.

Show this time as many different ways as possible.

4 Use < or > to make these statements true.

1 009	____	1 509
25 000	____	52 064
79 109	____	79 100
167 791	____	168 791
464 000	____	500 000
7·83	____	9·25
1·08	____	1·80
136·2	____	497·5

The smaller part of the less than sign (<) points to the smallest number. The larger part (>) points to the larger number. For example, 17 < 25 and 198 > 42

Challenge

You need to choose a relay team to run in a 26 km marathon.

You can choose the number of runners in the team, however guidelines insist there must be a minimum of 3 runners and a maximum of 10 runners.

Rules state it is essential that each person in the team runs the same distance.

How many runners in your team? _____

What distance must each person run? _____

Prove your answers.

1 Complete these multiplication facts.

Number	**× 10**
0·873	
8·73	
87·3	
873	
8 730	
87 300	

What pattern do you notice? _____

_____

Explain why this pattern happens.

_____

_____

2 Select the best unit of time to measure the following.

Time spent on school holidays _____

Time spent sleeping each day _____

Length of a school term _____

Your age _____

Time taken to sneeze _____

Time taken to travel to New Zealand by plane_____

Time taken to eat breakfast _____

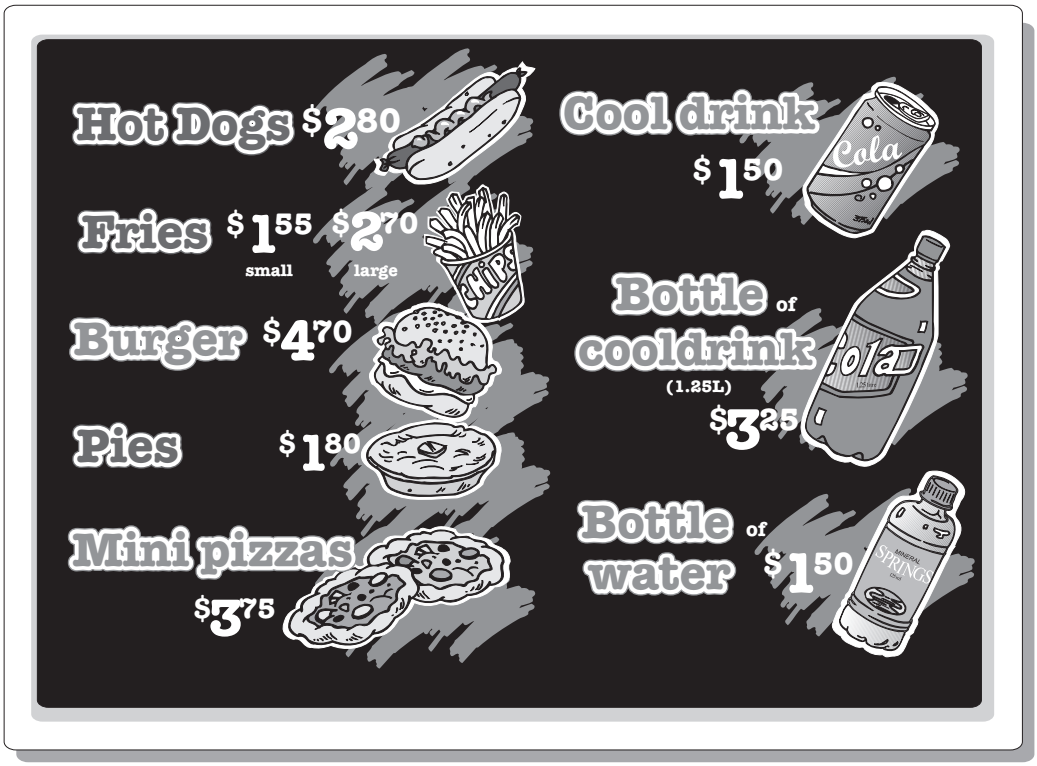
Time taken to play hockey _____

Eating an icecream _____

Time taken to build a house _____

Units of time:
hours
minutes
days
seconds
fortnight
week
month
decade
year

3



a) Circle 3 items you would purchase from the menu.

Calculate the cost of those items. $ _____

b) What is the cost of purchasing a can of cool drink and a pizza?
$ _____

c) What is the cost to purchase a pie and small fries?
$_____

d) How much change would I get from $10:00 if I bought a hot dog and a large fries? _____

e) Would $10:00 be enough money to purchase a burger, small fries and a bottle of cool drink? How much change would you get? _____

You may use each digit more than once in each number sentence.

Hint:

□ = *1 digit number*

□□ = *2 digit number*

Challenge

Write the digits 3, 5, 8 or 9 in the boxes to complete the number sentences. You may need to use a calculator.

□ × □ × □ = 120

□□ + □ = 56

□□ – □ = 89

□□ + □□ = 77

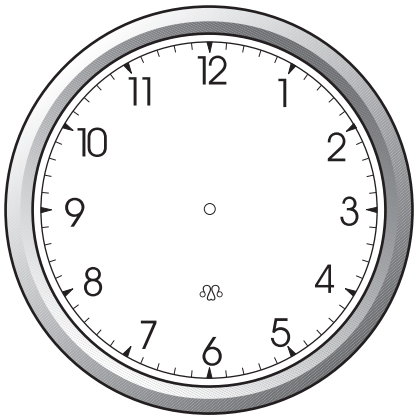
□□ + □□ = 128

1 List 3 morning events and 3 afternoon events you do on a Saturday.

am	pm

2 Draw 2 lines through the clock face so that the numbers in each area of the clock add up to the same total.

Show your solution on the clock outline below.



3 Complete this division table.

	8 ÷	**16 ÷**	**32 ÷**	**40 ÷**	**64 ÷**
1					
2	4	8			
4					
8					

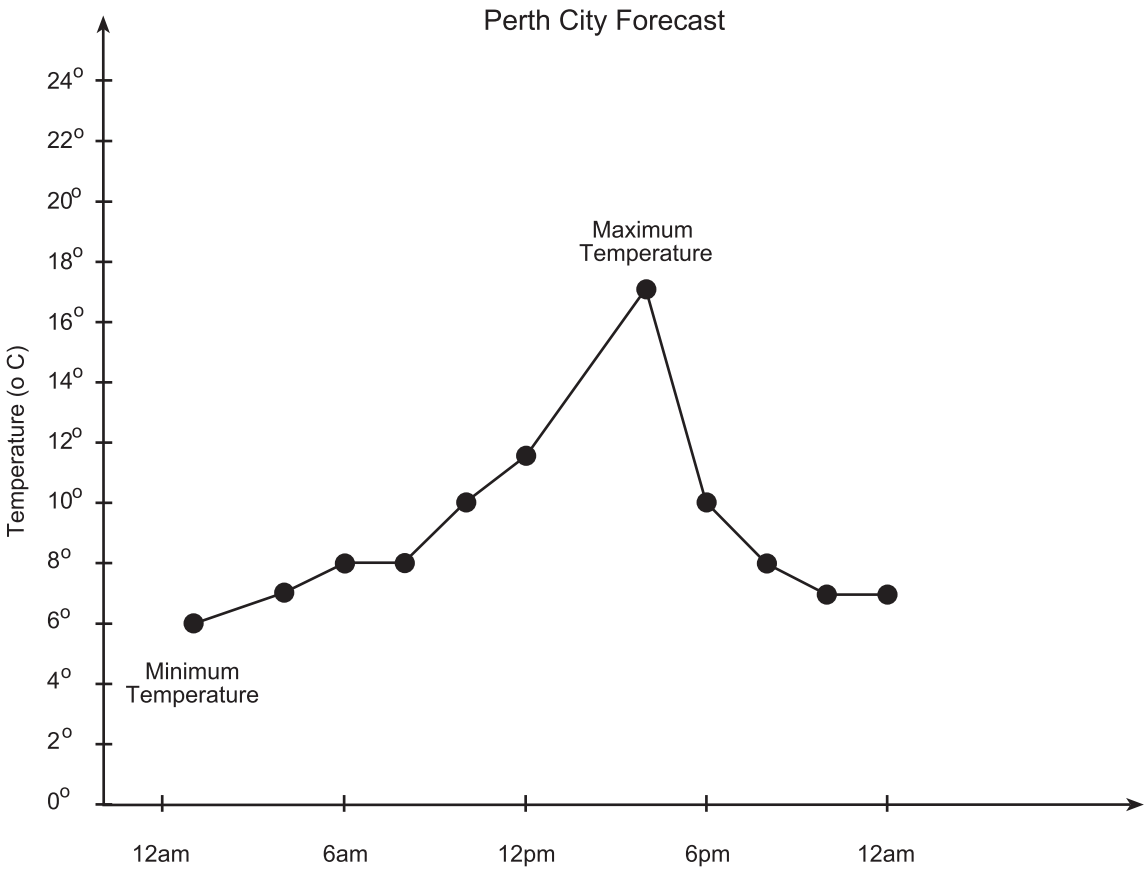
Describe any pattern you notice. _____

_____

_____

_____

4 What does this graph tell you?



What type of graph is this? _____

What season do you think it is most likely to be? _____

Why? _____

5 Complete this number sequence.

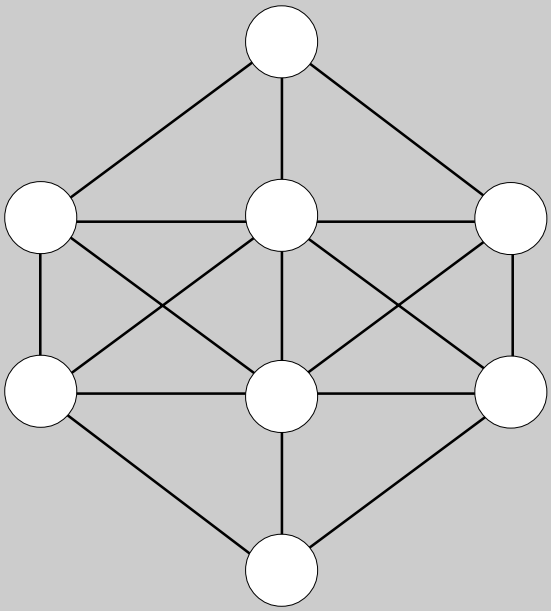
100 – 7 = 93	1 632 – 12 = 1 620
100 – 17 = 83	1 632 – 22 = 1 610
100 – 27 = 73	1 632 – 32 = 1 600
_____	_____
_____	_____
_____	_____
_____	_____

What pattern do you notice?

_____

Challenge

Write the numbers 1 – 8 (including 1 and 8) in each circle. Make sure consecutive numbers are not joined by a line.



Consecutive numbers are numbers which follow each other in an unbroken sequence. For example, 1, 2, 3, 4, 5, or 101, 102, 103, 104 .

1 Complete this table.

×	4	9	12	8	7
5					
7	28	63			
8					
11					
10					

2 Use a calculator:

a) to solve 5×21 without using the [5] key. Use a calculator:
Write a number sentence to show how you did it.

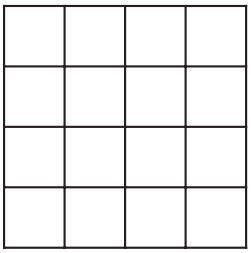
b) to solve 8×39 without using the [9] key.
Write a number sentence to show how you did it.

c) to solve 7×125 without using the [2] key.
Write a number sentence to show how you did it.

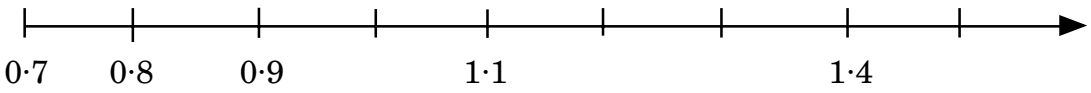
d) Write your own question similar to those above.
Use a calculator to solve _____ without using the [ ] key.
Write a number sentence to show how you did it.

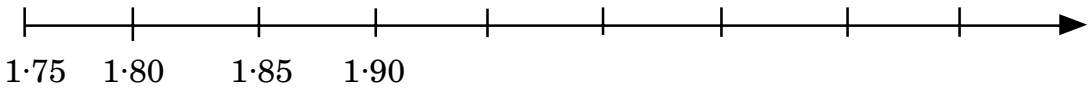
3 How many squares are there in this shape?
(Hint: the squares can be different sizes)

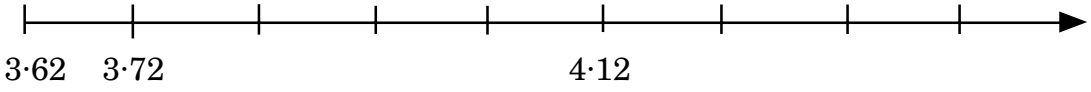
Answer: _____



4 Write the missing numbers along each number line.

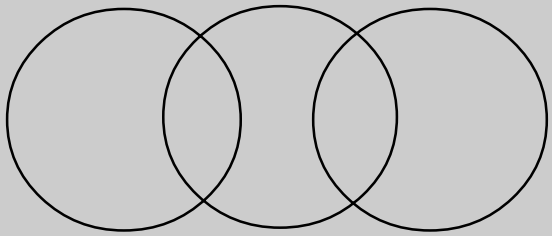




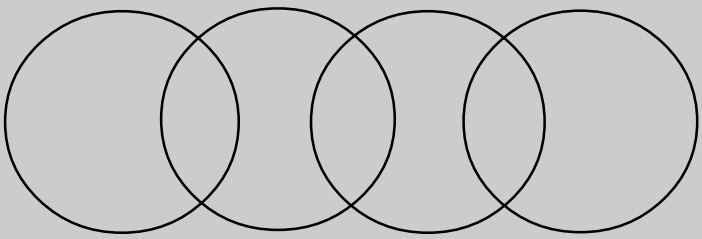


Challenge

Write the numbers 1, 2, 3, 4, and 5 into each of the sections so each circle has the same total.



Write the numbers 1 – 7 into each of the sections so each circle has the same total.



1 Convert these 24 hour times to 12 hour times. Remember to write 'am' or 'pm' next to each.

0230h _____ 720h _____

1249h _____ 1430h _____

2030h _____ 1923h _____

2232h _____ 0500h _____

2 Write these numbers in words.

873 _____

1 697 _____

34 319 _____

_____

45 072 _____

_____

743 931 _____

_____

349 007 _____

_____

1 647 946 _____

_____

3 085 313 _____

_____

Say each number aloud to your home tutor.

3 You decide to prepare an evening meal for 7pm.

Entreé:	Mini spring rolls (take 10 minutes to heat)
Main Meal:	Corn on the cob (takes 5 minutes) Chicken and potato pie (takes 30 minutes to cook)
Dessert:	Sweet Apple pie (takes 45 minutes to cook)

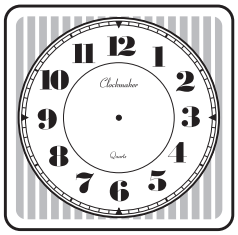
Show a timeline of how you would prepare the evening meal. Remember to include the start and finish cooking times for each dish.

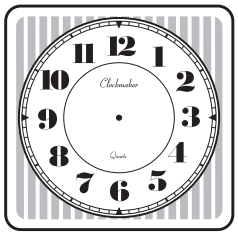
Remember, entreé needs to be ready first, and the main meal dishes need to be ready to eat at the same time.

4 Show the times on these analog clocks.

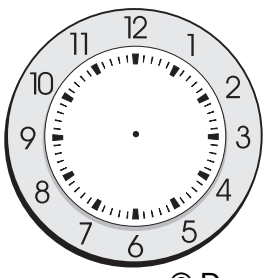
a) It is 20 past 6 ⟶ 25 minutes later it will be _____

b) It is 35 past 11 ⟶ 45 minutes later it will be _____

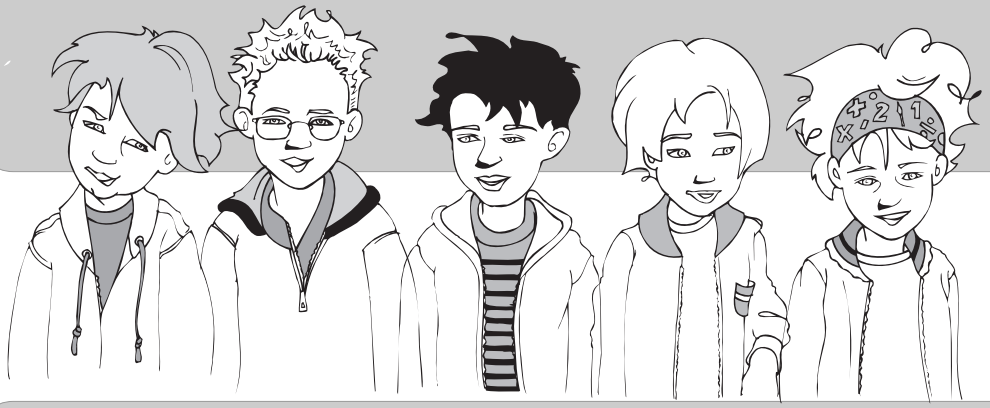




c) It is 8 minutes past 6 ⟶ 16 minutes later it will be _____



Challenge



Ed Charles Matt Josephine Cassandra

These 5 students like to eat different types of rolls for lunch: vegemite, ham, salad, cheese and polony.

Which roll does each student prefer? Use the clues provided to solve the puzzle.

1 No girls like to eat a cheese roll.

2 No boys like vegemite rolls.

3 Matt and Josephine do not like ham rolls.

4 Cassandra likes to eat ham or salad rolls.

5 Ed and Charles dislike polony rolls.

6 Charles' favourite roll is salad.

Which roll does each student like to eat?

Students may find it useful to show this information in a two-way table

1 A one hour video tape records 60 minutes of televison footage.

A two hour video tape records _____ minutes of televison footage.

How many minutes of footage does a three hour tape record? _____

How many minutes of footage does a four hour tape record? _____

What length video would be most suitable to record the duration of these programs:

55 minutes? _____

70 minutes? _____

175 minutes? _____

200 minutes? _____

2 Write the next 3 numbers in this sequence.

0, 1, 4, 9, 16, _____, _____, _____,

How did you work out what the next numbers were?

_____

_____

_____

3 Complete these word problems.

a) A CD runs for 1 hour and 5 minutes. What time would the CD have started if it finished at 9:10 pm?_____

b) Chantelle works the following hours:

Monday: 4:15 to 6:00 pm

Tuesday: No work

Wednesday: 4:20 to 6:10 pm

Thursday: 5:45 to 8:20 pm

Friday: No work

Saturday: 8:30 to 12:40 pm

How many hours and minutes will Chantelle be paid for this week? _____

c) A basketball match started at 9:00 am. There are four 12 minute quarters, with a 2 minute break between each quarter. What time did the game finish? _____ am

d) In a relay, the first length took 24 minutes, the second length took 26 minutes and the third length took 28 minutes. How long did the relay take? _____

e) In a marathon team relay, the first swimmer completed their length in 3 hours 5 minutes, the second swimmer finished in 3 hours 56 minutes, the third swimmer in 4 hours 11 minutes.

How long did it take the three swimmers to complete the race?

_____

f) How many seconds in a day? _____

g) The video Zar and Peta were watching started at 8:55 and finished at 10:40. How long was the video? _____

Challenge

Students in a year 6 class were given this number sentence:

4·5 + 0·34 =?

This is how one student explained his working out.

You always line up all the numbers on the right hand side then add them up.

4·5

+ 0·34

0·79

Explain why Luke's rule does not work for this calculation.