

# **East Preston Islamic College**

## **Holiday Homework Grade 6 - Term 3**

### **Mathematics – 2017**

#### **Instructions:**

**Please read the questions and instructions carefully before doing your work**

**You have to complete all the attached worksheets**

**Learn the times tables by heart (2-12)**

**Complete all assigned tasks (Mathematics)**

**Due Date: 10 October 2017**

Name: \_\_\_\_\_

Class: Grade 6 \_\_\_\_\_

Due Date: 10 Oct 2017

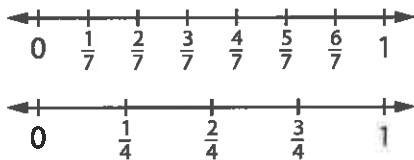
**Skill 10.9 Comparing two fractions with the same numerators.**

- Compare the position of the fractions on the number line.
- Use  $<$  if the first fraction is to the left of the second fraction on the number line.
- Use  $=$  if the two fractions are at the same point on the number line.
- Use  $>$  if the first fraction is to the right of the second fraction on the number line.

$<$  is less than  
 $=$  is equal to  
 $>$  is greater than

*Hint: The fraction with the smaller denominator is larger.*

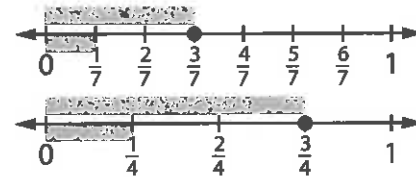
**Q.** Use  $<$ ,  $=$  or  $>$  to make this true.



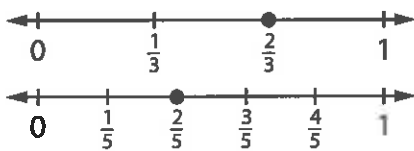
$\frac{3}{7}$    $\frac{3}{4}$

**A.**  $\frac{3}{7} < \frac{3}{4}$

One seventh is smaller than one fourth. Therefore three sevenths is less than three fourths.

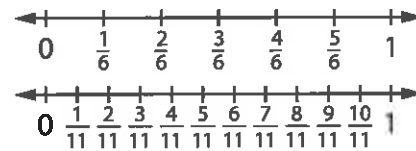


**a)** Use  $<$ ,  $=$  or  $>$  to make this true.



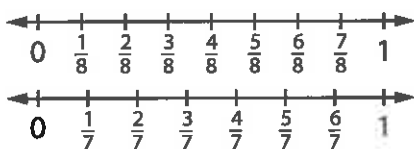
$\frac{2}{3}$    $\frac{2}{5}$

**b)** Use  $<$ ,  $=$  or  $>$  to make this true.



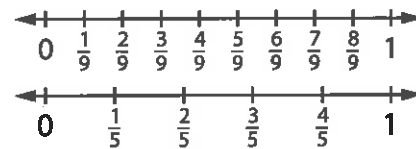
$\frac{5}{6}$    $\frac{5}{11}$

**c)** Use  $<$ ,  $=$  or  $>$  to make this true.



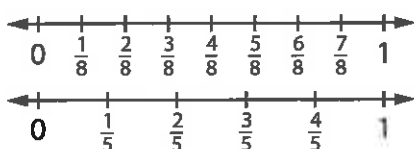
$\frac{3}{8}$    $\frac{3}{7}$

**d)** Use  $<$ ,  $=$  or  $>$  to make this true.



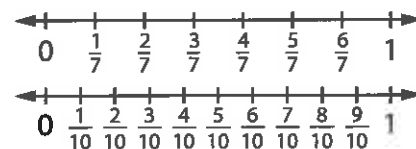
$\frac{2}{9}$    $\frac{2}{5}$

**e)** Use  $<$ ,  $=$  or  $>$  to make this true.



$\frac{4}{8}$    $\frac{4}{5}$

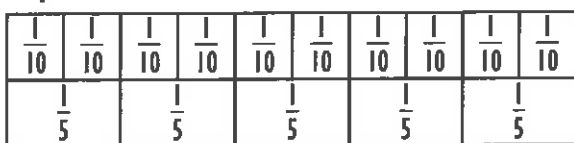
**f)** Use  $<$ ,  $=$  or  $>$  to make this true.



$\frac{6}{7}$    $\frac{6}{10}$

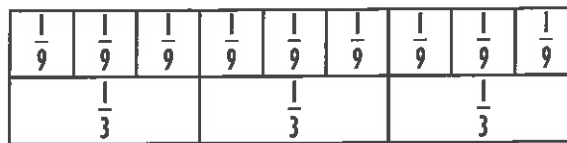
**Skill 10.10** Completing equivalent fractions (2).

e) Shade the bars to complete the equivalent fractions.



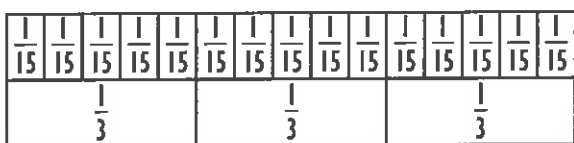
$$\frac{4}{10} = \frac{\square}{5}$$

f) Shade the bars to complete the equivalent fractions.



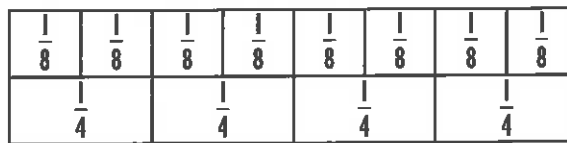
$$\frac{3}{9} = \frac{\square}{3}$$

g) Shade the bars to complete the equivalent fractions.



$$\frac{5}{15} = \frac{\square}{3}$$

h) Shade the bars to complete the equivalent fractions.



$$\frac{6}{8} = \frac{\square}{4}$$

i) Complete to form equivalent fractions:

$$\frac{4}{5} = \frac{16}{\square}$$

j) Complete to form equivalent fractions:

$$\frac{2}{3} = \frac{6}{\square}$$

k) Complete to form equivalent fractions:

$$\frac{1}{3} = \frac{\square}{9}$$

l) Complete to form equivalent fractions:

$$\frac{2}{6} = \frac{1}{\square}$$

m) Complete to form equivalent fractions:

$$\frac{1}{2} = \frac{\square}{8}$$

n) Complete to form equivalent fractions:

$$\frac{4}{10} = \frac{\square}{5}$$

o) Complete to form equivalent fractions:

$$\frac{2}{8} = \frac{1}{\square}$$

p) Complete to form equivalent fractions:

$$\frac{4}{12} = \frac{\square}{3}$$

q) Complete to form equivalent fractions:

$$\frac{6}{15} = \frac{\square}{5}$$

r) Complete to form equivalent fractions:

$$\frac{2}{7} = \frac{8}{\square}$$

s) Complete to form equivalent fractions:

$$\frac{2}{3} = \frac{\square}{18}$$

t) Complete to form equivalent fractions:

$$\frac{3}{10} = \frac{9}{\square}$$

### Skill 10.14 Simplifying fractions.

- Decide if the fraction can be simplified.
  - Divide both the numerator and the denominator by the same number.
- Hint: If the numbers are both even then you can always start with dividing by 2.*

Example:

$$\begin{array}{l} \text{6} \text{ (numerator (even))} \\ \text{8} \text{ (denominator (even))} \end{array} \quad \frac{6}{8} \stackrel{\div 2}{=} \frac{3}{4}$$

#### SIMPLIFYING FRACTIONS RULE

If both numbers, top (numerator) and bottom (denominator), can be divided by the same number then the fraction can be simplified.

- Continue dividing by any of the prime factors (2, 3, 5 ...) until the fraction can no longer be simplified.

Q. Simplify:  $\frac{6}{10}$

A.  $\frac{6 \div 2}{10 \div 2} = \frac{3}{5}$

Both 6 and 10 are even numbers. They can be divided by 2. The fraction can be simplified.

a) Simplify:  $\frac{12}{18}$

$$\frac{12 \div 2}{18 \div 2} = \frac{6 \div 3}{9 \div 3} = \frac{2}{3}$$

b) Simplify:  $\frac{4}{6}$

c) Simplify:  $\frac{9}{12}$

d) Simplify:  $\frac{5}{10}$

e) Simplify:  $\frac{3}{9}$

f) Simplify:  $\frac{8}{14}$

g) Simplify:  $\frac{10}{12}$

h) Simplify:  $\frac{9}{15}$

i) Simplify:  $\frac{4}{20}$

j) Simplify:  $\frac{15}{25}$

k) Simplify:  $\frac{10}{25}$

l) Simplify:  $\frac{20}{70}$

m) Which of the following fractions **cannot** be simplified?

- A)  $\frac{2}{15}$  B)  $\frac{3}{15}$  C)  $\frac{4}{15}$  D)  $\frac{5}{15}$

n) Which of the following fractions **cannot** be simplified?

- A)  $\frac{4}{10}$  B)  $\frac{6}{10}$  C)  $\frac{7}{10}$  D)  $\frac{9}{10}$

o) Which of the following fractions **cannot** be simplified?

- A)  $\frac{6}{18}$  B)  $\frac{7}{18}$  C)  $\frac{9}{18}$  D)  $\frac{11}{18}$

**Section B (50 marks)**

For questions 6 to 18, show your working clearly in the space provided for each question and write your answers in the spaces provided.

The number of marks available is shown in the brackets [ ] at the end of each question or part question. Remember to include the units wherever possible.

6. Construct a triangle ABC such that  $AB = 8 \text{ cm}$ ,  $\angle BAC = 60^\circ$  and  $\angle BCA = 30^\circ$ . Measure and write the length of AC. [3m]

Do not write  
in this space

Ans : AC = \_\_\_\_\_

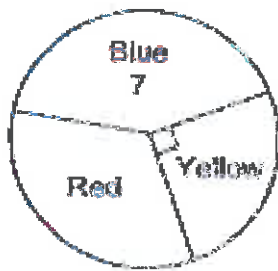


7. Cathy spent  $\frac{1}{5}$  of her money on pens and  $\frac{5}{8}$  of her remaining money on 2 books. Each book costs 15 times as much as a pen. How many pens did she buy?

Ans : \_\_\_\_\_ [3m]



8. The pie chart represents the number of red, yellow and blue marbles. There are 3 more red than yellow marbles. How many yellow marbles are there?



Ans : \_\_\_\_\_ [3m]

9. A shopkeeper bought a handbag for \$360. What is the selling price of the handbag so that he can allow a discount of 10% of the selling price and yet earn 10% on the cost price?

Ans : \_\_\_\_\_ [3m]

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in this space



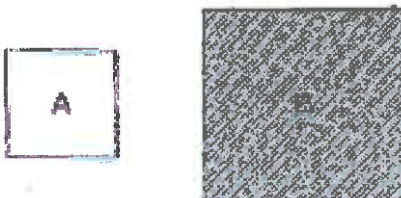
10. The table below shows the time John took to run 100 metres during his training sessions.

Attempt	1st	2nd	3rd	4th	5th	6th	7th	8th
Time Taken (in seconds)	18	18	21	19	15	20	22	?

If he wishes to improve his average time taken by 0.5 seconds, what timing should he attain for his 8<sup>th</sup> attempt?

Ans: \_\_\_\_\_ [3m]

11. A and B are squares. The lengths of the squares are whole numbers.



When Square A is placed over Square B as shown in the figure below, the shaded area is  $85 \text{ cm}^2$ .



Find the perimeter of the shaded region.

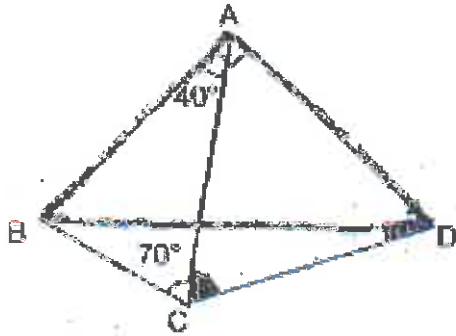
Ans: \_\_\_\_\_ [3m]

5

Do not write  
in this space



12. In the figure,  $\angle BAD$  is a right angle and  $AC = AD$ .  
Find (a)  $\angle ACD$ .  
(b)  $\angle BDC$ .



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in this space

Ans : (a) \_\_\_\_\_ [1m]  
(b) \_\_\_\_\_ [3m]





13. 80% of the people in a hall were adults. 75% of the children in the hall were boys. There were 36 more boys than girls.

Some boys left the hall, after which 10% of the remaining people in the hall were boys. How many boys left the hall?

Do not write  
in this space

Ans \_\_\_\_\_ [4m]



14. A train has a capacity of 154 seats. Tickets for seats are sold at \$8 and \$12. There are  $\frac{1}{5}$  more \$8-seats than \$12-seats on the train.

During a trip, the amount collected from the sales of \$8 tickets was twice the amount collected from the \$12 tickets. The total amount collected was \$540. How many \$8-seats were not taken during the trip?

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in this space

Ans : \_\_\_\_\_ [4m]

# Decimal fractions – comparing and ordering decimals

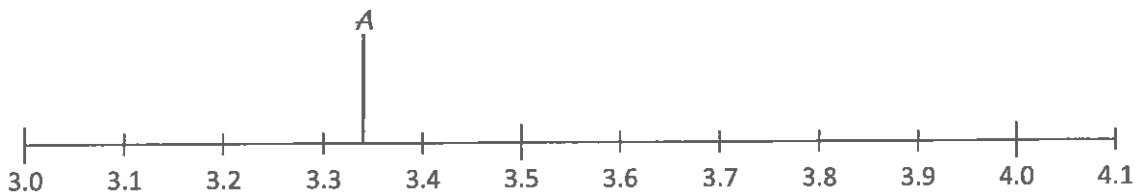
We need to carefully consider the place value of digits when ordering and comparing decimals.



	Name	Distance
A	Spitter Macgee	3.34 m
B	Did You See That One Big-noter	3.1 m
C	Secret-ingredient Spitski	3.15 m
D	Dead-eye Jones	3.63 m
E	The Long Distance Shooter	4.01 m
F	Sally Straw	3.36 m
G	Technique Tezza	3.96 m
H	Lone Shooter	4.04 m
I	Double Or Nothing Danielle	4.05 m
J	Shoot Dog	3.94 m

- 1 6A has a very cool teacher who decides to harness, not ban, the class' current obsession with pea shooting. After a week of intense training, a shoot-off occurs. The results for the top ten shooters are tabled on the right.

Place the students on the number line. The first one has been done for you.



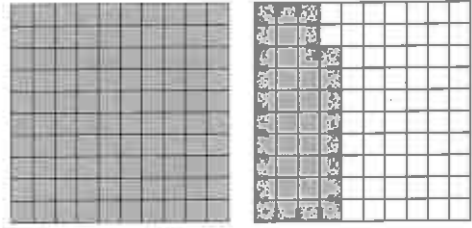
- 2 Use the above information to answer the following questions:

- a Who shot the furthest on the day? \_\_\_\_\_
- b Whose shot was the shortest? \_\_\_\_\_
- c Which students' shots were 1 hundredth of a metre apart?  
\_\_\_\_\_
- d What was the difference between the shots of Shoot Dog and Spitter Macgee? \_\_\_\_\_
- e Do you think you could beat this? Something to try at home perhaps? Even 6A's teacher eventually had enough of the pea shooting.

# Decimal fractions – renaming decimals

We can express the same decimal fraction in different ways.  
This shows 138 hundredths.

We can also express this as 1 unit, 3 tenths and 8 hundredths  
or 13 tenths and 8 hundredths or 1 unit and 38 hundredths.



## 1 Rename these fractions:

- a 37 hundredths is also  tenths +  hundredths
- b 53 hundredths is also  tenths +  hundredths
- c 99 hundredths is also  tenths +  hundredths
- d 6 tenths and 3 hundredths is also  hundredths
- e 4 tenths and 9 hundredths is also  hundredths
- f 4 tenths, 9 hundredths and 8 thousandths is also  thousandths
- g 0 tenths, 5 hundredths and 8 thousandths is also  thousandths

It may help to write these numbers in their decimal forms.

## 2 Now try these. Fill in the missing information:

- a 4 units = 40 tenths = 400 hundredths = \_\_\_\_\_ thousandths
- b \_\_\_\_\_ units = 70 tenths = \_\_\_\_\_ hundredths = \_\_\_\_\_ thousandths
- c 2.5 units = \_\_\_\_\_ tenths = 250 hundredths = \_\_\_\_\_ thousandths
- d \_\_\_\_\_ units = \_\_\_\_\_ tenths = 900 hundredths = \_\_\_\_\_ thousandths



**THINK**

## 3 Rename these numbers as many ways as you can. Use the abbreviation: H for hundredths, T for tenths and U for units:

5.67

2.52

9.81

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

# Decimal fractions – rounding

We often round decimals to a particular place value. We do this to make the numbers easier to work with.

Look at 2.685. We can round this to the nearest whole number, tenth or hundredth.

Let's round it to the nearest tenth. To do this, we look at the number in the hundredths place.

This is 8, which is closer to 10 than 1, so we round the tenth up. The rounded number is now 2.7

**1 Round these numbers to the nearest tenth:**

- a 67.23 \_\_\_\_\_      b 48.07 \_\_\_\_\_  
 c 124.78 \_\_\_\_\_      d 90.14 \_\_\_\_\_  
 e 54.53 \_\_\_\_\_      f 7.06 \_\_\_\_\_

If the rounding number is a 1 to 4, it rounds down. If it is 5 to 9, it rounds up.



**REMEMBER**

**2 Now round these numbers to the nearest hundredth:**

- a 58.127 \_\_\_\_\_      b 70.345 \_\_\_\_\_  
 c 45.007 \_\_\_\_\_      d 78.134 \_\_\_\_\_  
 e 89.036 \_\_\_\_\_      f 36.231 \_\_\_\_\_

**3 Use a calculator to perform the following operations. Round the answers to the nearest tenth:**

- a  $132.4 \div 5 =$  \_\_\_\_\_      b  $178 \div 8 =$  \_\_\_\_\_      c  $125.3 \div 4 =$  \_\_\_\_\_  
 d  $223 \div 4 =$  \_\_\_\_\_      e  $12 \div 7 =$  \_\_\_\_\_      f  $123.52 \div 4 =$  \_\_\_\_\_

**4 Look at the following meal options.**

a Round each price to the nearest dollar and total the estimated cost of each option below:

Choice 1	
Hamburger	\$4.95
Can of drink	\$2.25
Large chips	\$1.15
<b>Total</b>	

Choice 2	
Noodles with prawns	\$7.95
Green tea	\$0.95
3 Crab cakes	\$2.98
<b>Total</b>	

Choice 3	
Salad roll	\$5.15
Juice	\$2.25
Cookie	\$1.95
<b>Total</b>	

b You have \$10. Circle the choices you can afford.

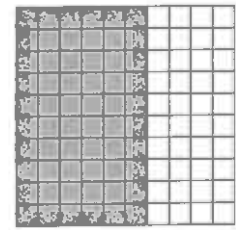
# Decimal fractions – percentages

Percent comes from the Latin 'per centum' and means parts per hundred. It is expressed using the symbol %.

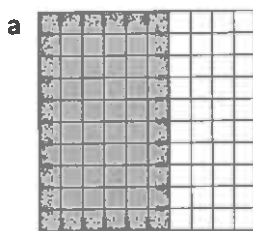
Here, 60% has been shaded. This is the same as 60 hundredths.

$$\frac{60}{100} = 0.60 = 60\%$$

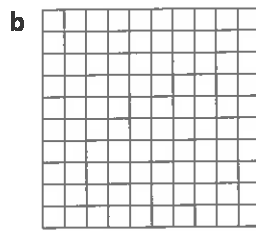
We commonly use percentages in sales – *25% off everything TODAY ONLY*; on tests – *I got 85%*; and when we are gathering and reporting on data – *78% of people surveyed love chocolate*.



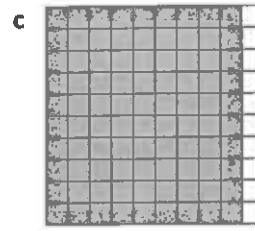
1 Fill in the missing values:



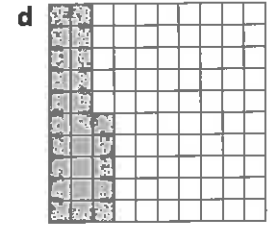
$\frac{60}{100}$	0.	%
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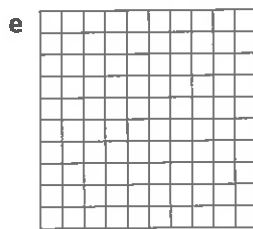
$\frac{30}{100}$	0.3	%
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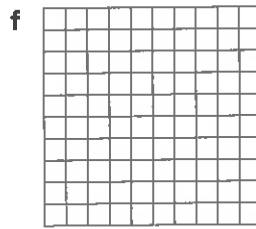
—	0.	90%
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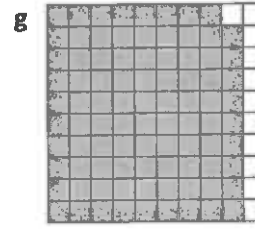
—	0.25	%
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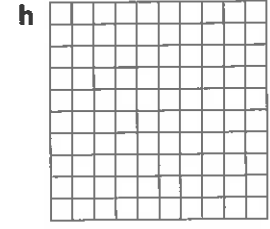
$\frac{45}{100}$	0.	%
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—	0.75	%
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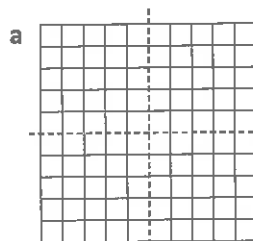
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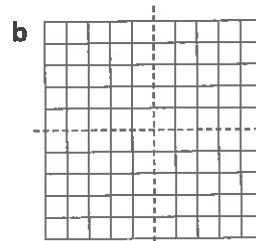
—	0.5	%
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It is useful to know some common percentages such as 25%, 50%, 75% or 100%.

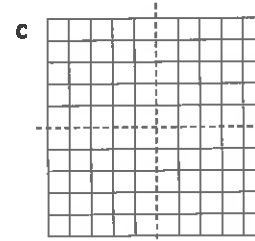
2 Shade the grids to show the following percentages:



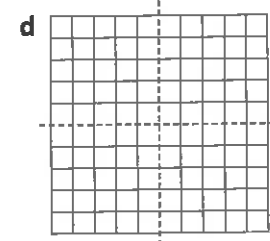
$\frac{1}{4}$	0.	%
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$\frac{1}{2}$	0.	%
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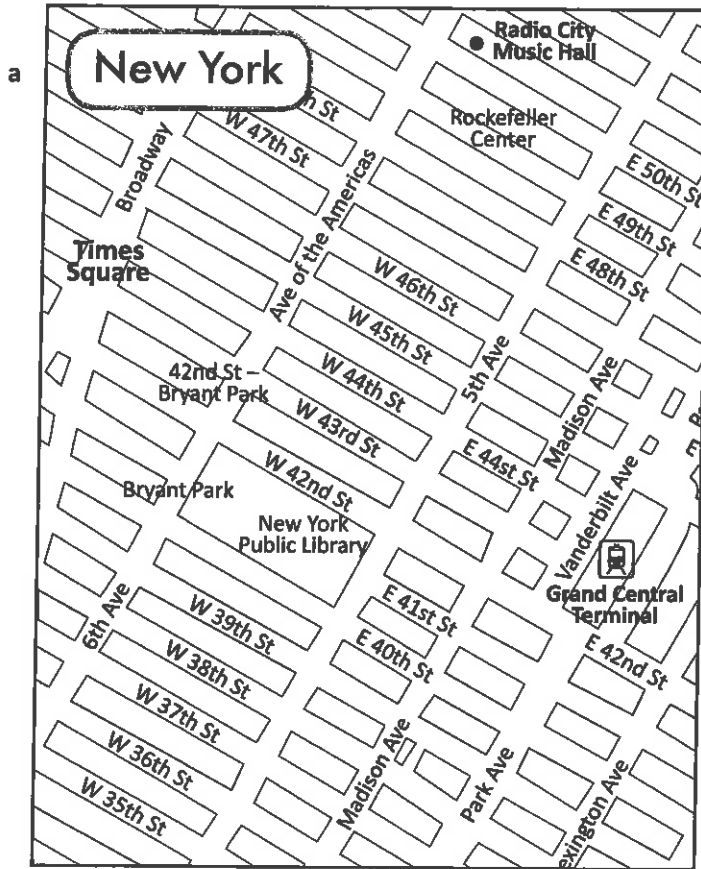
$\frac{3}{4}$	0.	%
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$\frac{4}{4}$		%
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# Coordinates – street directories

- 4 You will be travelling to 2 cities. In each city you will follow directions to locate a secret spot. Mark your travels on the map. Some of the clues are a little cryptic and might require some thought.



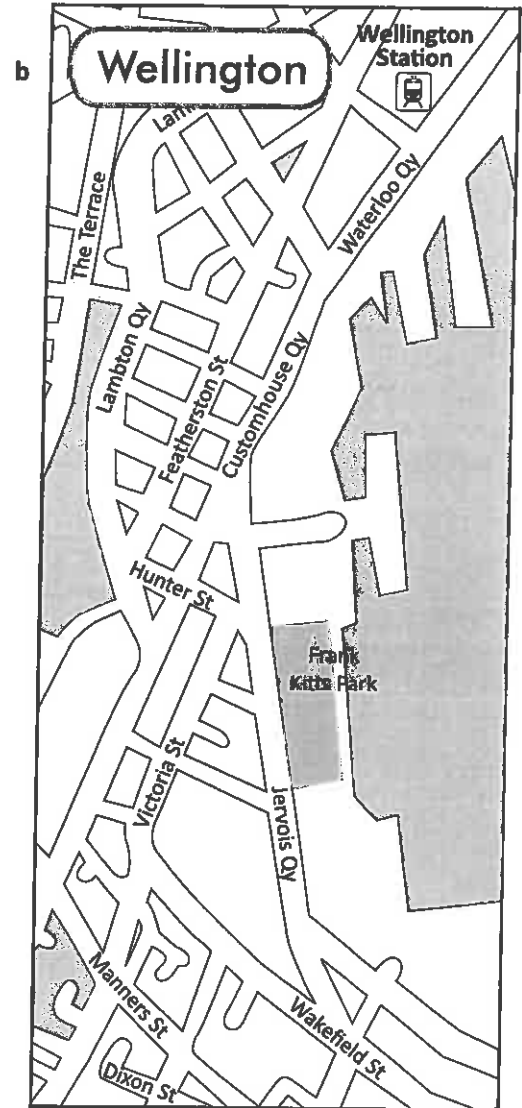
It's time to hit the streets of **New York (USA)**! You arrive at Grand Central Terminal and walk out onto Vanderbilt Avenue.

You want to get to Radio City Music Hall. Draw what you think would be the fastest route. From Radio City Music Hall, walk 8 blocks down Ave of the Americas/6th Ave and then turn left. What is on your right?

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Turn right into 5th Ave and turn right onto E 40th St. Walk for 2 blocks and then turn right onto Broadway. What famous area is 3 blocks to the right?

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You fly direct to **Wellington (New Zealand)**. Do you know what island are you on?

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You catch a train to Wellington Station and then head south on Featherston St. Turn left onto Hunter St and then right onto a street named after a queen.

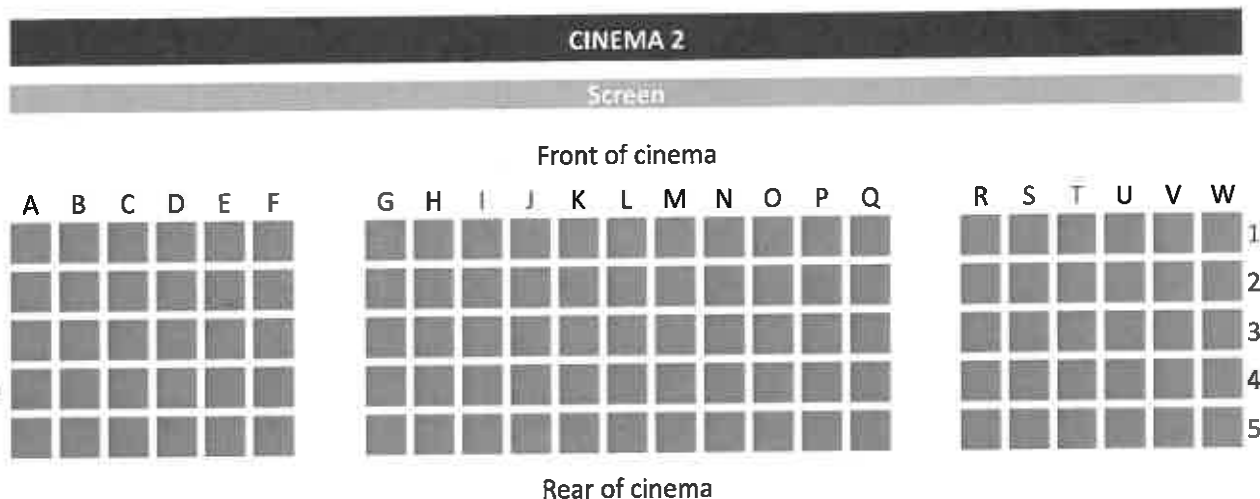
Turn into Wakefield St and then take your first left. Travel along this till you reach a park. What street does the park face onto?

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**What to do**

Look at the cinema plan. Use the clues to find who is sitting where.



The following seats were booked by 6 different people. Read the clues then fill in the table.

**Clue 1** Jack is sitting in E4.

**Clue 2** Molly is 2 rows directly in front of Jack.

**Clue 3** Trent is 2 seats to the left of N3.

**Clue 4** Carly is 12 seats to the right of Molly.

**Clue 5** Brian is on Carly's left.

**Clue 6** Lim is directly behind Trent.

**Clue 7** Zac is 6 seats to the right of Molly.

**Clue 8** Ella is on Lim's left.

**Clue 9** Will is in an aisle seat in row 3 in the section on the far right.

Name	Seat
Molly	
Jack	
Trent	
Brian	
Carly	
Lim	
Zac	
Ella	
Will	

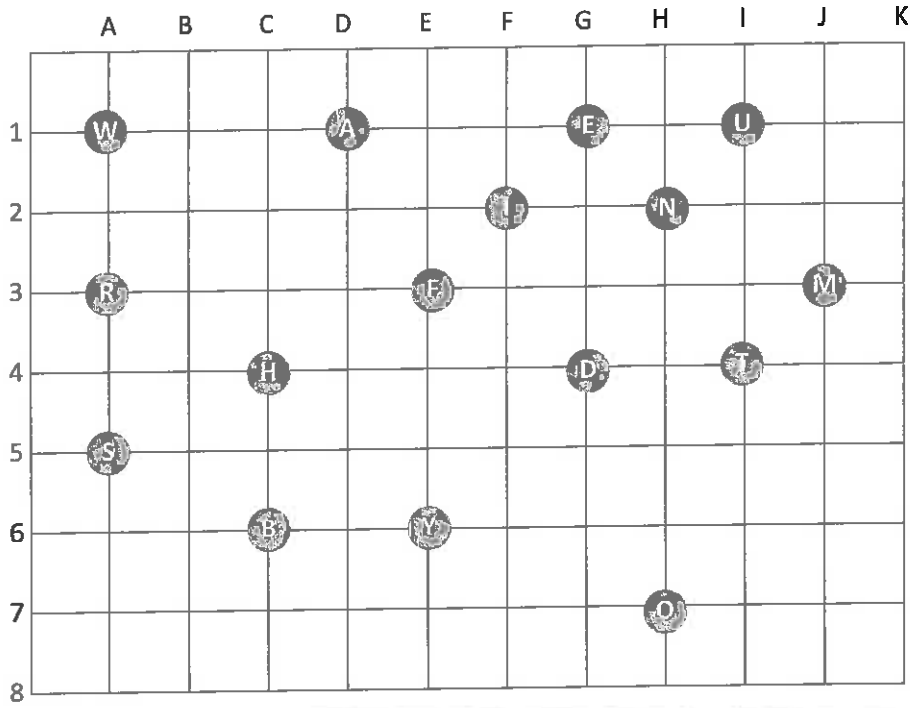




# Coordinates – plotting coordinates

Maps and street directories use coordinates to help us follow routes and find places.  
We read coordinates horizontally and then vertically, so the letter comes before the number.

1 Write the letter for each coordinate to work out the riddle and the answer:

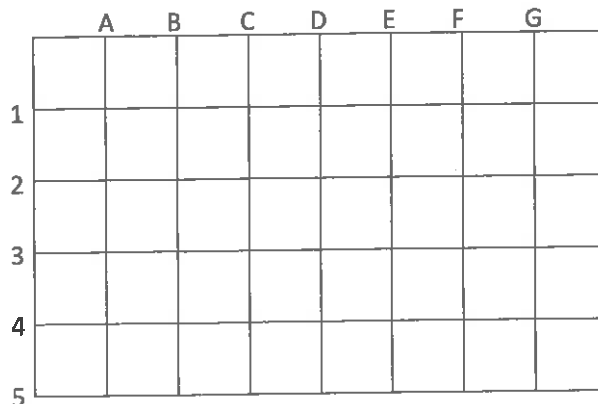


Questions	
A1, C4, D1, I4, A5	
E6, H7, I1, A3, A5	
C6, I1, I4	
E6, H7, I1, A3	
E3, A3, F2, G1, H2, G4, A5	
I1, A5, G1	
	F2, I4
	J3, H7, A3, G1
	I4, C4, D1, H2
	E6, H7, I1
	G4, H7?

Riddle answer	
E6, H7, I1, A3	
H2, D1, J3, G1!	

2 Plot these points and then connect them to make a 3D shape. Use a ruler.

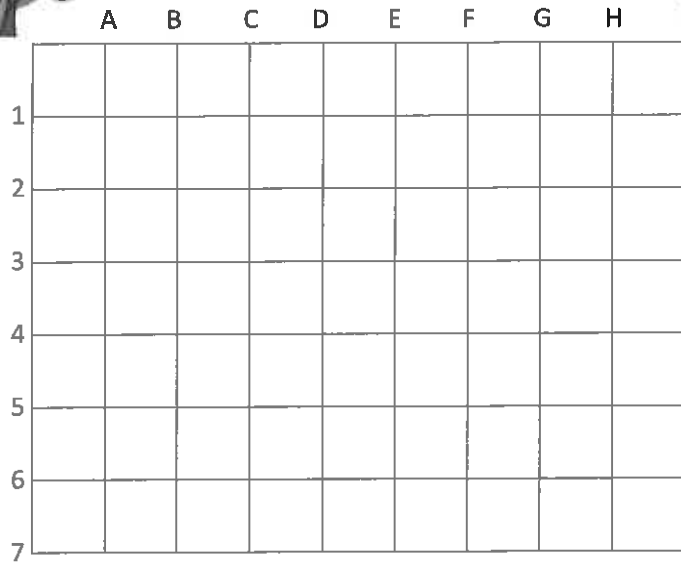
- |          |          |
|----------|----------|
| F1 to C1 | F1 to D3 |
| C1 to A3 | D3 to D5 |
| A3 to A5 | C1 to C3 |
| A5 to D5 | A3 to F3 |
| D5 to F3 | C3 to A5 |
| F3 to F1 |          |



# Coordinates – plotting coordinates

3 Plot and connect these coordinates to find the path taken by the cowboy to find his boots.

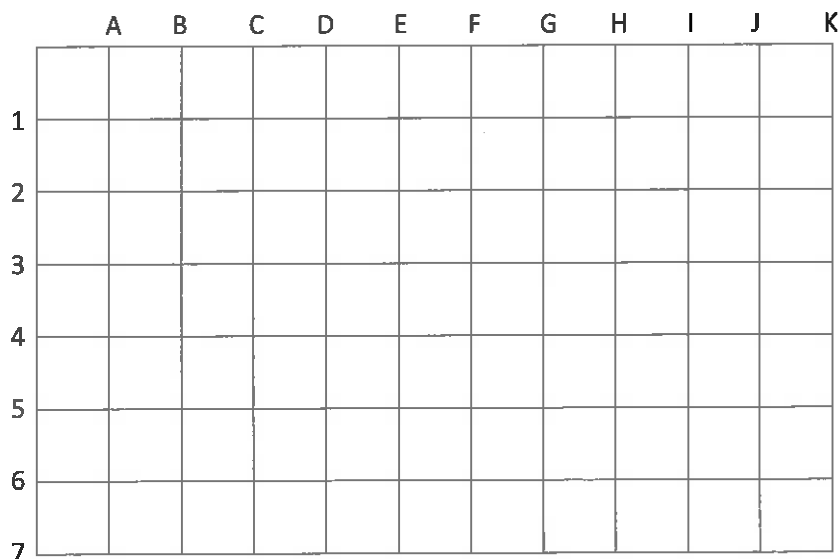
Plot these points: A1, A2, C2, C3, E3, E4, G4, G5, I5, I7



4 Connect each set of dots using a ruler:

E2 to D1, D1 to D3, D3 to B3, B3 to C4, C4 to B5, B5 to D5, D5 to D7, D7 to E6

Draw the other half of your shape and decorate.



# Patterns and functions – function shape patterns

When you are investigating geometric patterns, look closely at the position of each shape and think about how it is changing each time.

How many matchsticks are needed for the first shape?

How many more are needed for the next shape?

**1** Complete the table for each sequence of matchstick shapes. Use the function rule for finding the number of matchsticks needed for each shape including the 50th shape:



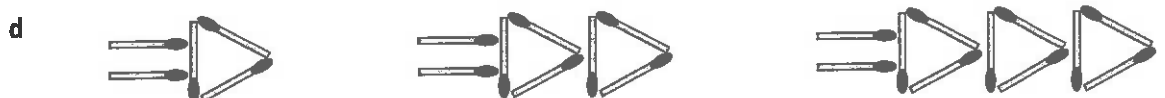
Shape number	1	2	3	4	5	6	7	8	9	10	50
Number of matchsticks	4	7	10	13	16						
Function rule	Number of matchsticks = Shape number × _____ + 1										



Shape number	1	2	3	4	5	6	7	8	9	10	50
Number of matchsticks	6	10	14	18	22						
Function rule	Number of matchsticks = Shape number × _____ + _____										



Shape number	1	2	3	4	5	6	7	8	9	10	50
Number of matchsticks	3	5	7	9	11						
Function rule	Number of matchsticks = Shape number × _____ + _____										



Shape number	1	2	3	4	5	6	7	8	9	10	50
Number of matchsticks	5	8	11	14	17						
Function rule	Number of matchsticks = Shape number × _____ + _____										

## Patterns and functions – function shape patterns

- 2 Gia started to make a sequence out of star and pentagon blocks and recorded her findings in the table as she went. She had to stop when she ran out of pentagons. This is where she got up to:



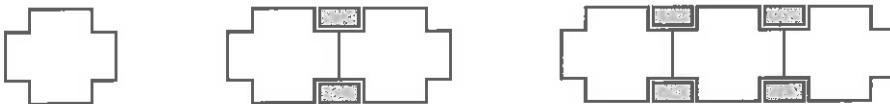
- a Help Gia continue investigating this sequence by using the table below:

Shape number	1	2	3	4	5	6	7	8	9	10	15
Number of stars	1	2	3								
Number of pentagons	0	1	2								
Rule for stars	Number of stars = Number of pentagons + 1										
Rule for pentagons	Number of pentagons = Number of stars - 1										

- b How many stars are in the 10th shape?

- c How many pentagons are there in the 15th shape?

- 3 Tyson also made a sequence out of pattern blocks but stopped after the first 3 shapes and decided to continue investigating by using the table.



Shape number	1	2	3	4	5	6	7	8	9	10
Number of crosses	1	2	3							
Number of rectangles	0	2	4							
Rule for crosses	Number of crosses = $(2 + \text{number of rectangles}) \div 2$									
Rule for rectangles	Number of rectangles = $(2 \times \text{number of crosses}) - 2$									

- a How many rectangles will there be in the 12th shape?

- b Josie made this shape following Tyson's sequence.



What is the position of this shape? \_\_\_\_\_

How do you know?