Grade 5 NAPLAN preparation pack:

Below is a guide with example questions to use with students preparing for NAPLAN for three weeks prior to the test. By this stage students are expected to have spent a term working with *Back-to-Front Maths* in order to help find and correct their misconceptions, particularly with regard to fractions and place value, and to develop deep understandings of mathematical concepts. The questions in this pack will help you work out where students still have problems and will give students some practice at answering non-standard questions before the test. They are not intended as a complete package and do not cover every aspect of numeracy that could be on the NAPLAN tests.

How to use the pack:
Allow students to try the problems for each day first, and then talk them through as a class. Make sure that you try to have students self-correct their own misconceptions rather than telling them the answers. Misconceptions are often present in the multiple choice NAPLAN questions and help determine if students have deep understanding or just routine, procedural skills.

Below is a suggested sequence for using the questions. The questions for each day are nominally drawn from a particular strand, but often contain questions that could be used for another strand. Each day's questions are not expected to take the same amount of time or be a complete lesson.

Week 1: Consolidating Number Concepts
1. Basic place value with whole numbers
2. Place value with decimal numbers
3. Operations in context
4. Operations in context continued
5. Number patterns and equations

**Week 2: Extending number concepts and chance and data**
6. Fractions 1: basic concepts
7. Fractions 2
8. Fractions 3: advanced concepts and conversions
9. Chance
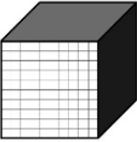10. Data

Week 3: Measurement and Space
11. Measuring length, area and volume
12. Time
13. 2D shapes and transformations
14. 3D shapes and transformations
15. Maps and directions

Day 1: Basic place value with whole numbers

These blocks are MAB. The numbers that represent them are written below. Colour the star that shows where the number 100 should go.

100

1   1000
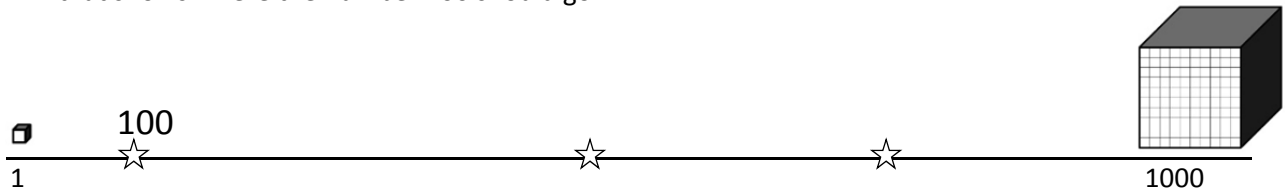
Which of the following representations is **not** equal to 3547?

Thousands	Hundreds	Tens	Ones
3	5	4	7
2	15	2	27
2	13	22	27
3	4	15	7

X

If you had to start building your 10 000 by using the following blocks, what others would you add to them to make 10 000?

5752
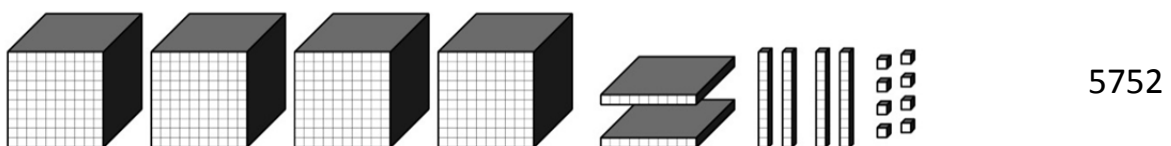
Below is a number line between 0 and 10 000. Where do you think 1000 should go? Where do you think 100 should go? Have a guess at where they would go and draw them here:

X

0   10 000   10 000
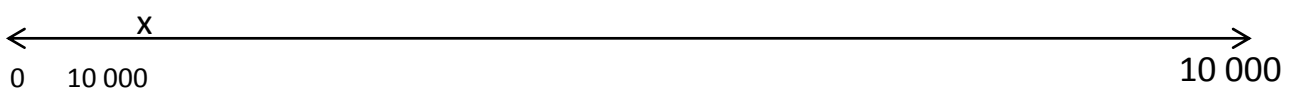
What number would have 24 hundreds, 59 tens and 16 ones?   3006

Write the following number in digits: 32 thousands, 43 hundreds and 784 ones:

37084

Write the number for the following words: Thirty-two hundred and six.
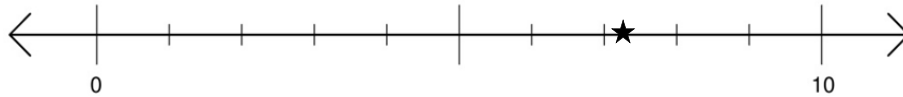
3206

For the following set of numbers, find the half-way point between the largest and the smallest: 10 001, 11 010, 11 000, 10 101. Calculator allowed.

10505.5

Day 2: Place value with decimal numbers

The star on the number line below shows the position of one of the numbers listed. Circle the correct number.

0.7   0.73   *7.3   7.03

0   10

Here is a picture of 23 made using MAB. What would I need to put with it to make it 23.7? What would you need to do to make the .7 part?

   Cut a ones block into 10 pieces. Use 7, throw away 3.

A.   Use seven of the *Ones blocks* and put a dot between them and the 23.

B.   Use a *Tens block*. Shade in 7 out of the 10 pieces.

C.   Cut a *Ones block* into 7 pieces. Use all of the pieces.

X D.   Cut a *Ones block* into 10 pieces. Use seven of the pieces.

Label one end of the line below 0 and the other end 1. Find and label the following numbers:
0.4, 0.45, 0.39, 0.04, 0.3, 0.5, $^{45}/_{100}$, $^4/_{100}$, $^4/_{10}$ and 0.05 on the line.

0.04   0.39 45/100
 0.05   0.3   0.4 0.45
04/100   4/10   1
                                           0.5
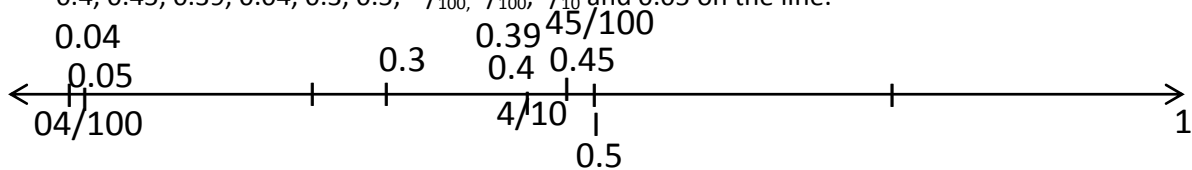
How many tenths are in 1.5?   15

How many tenths are in 1.50?   15

If I had 678 hundredths, what number would I have?   6.78

How many hundredths would there be in 12.6?   1260

Which of the following representations is not equal to 2.34?

A. $2 + {}^{3}/_{10} + {}^{4}/_{100}$

X B. $2 + {}^{3}/_{10} + 0.4$

C. $2 + 0.3 + {}^{4}/_{100}$

D. $1 + {}^{13}/_{10} + 0.04$

Draw arrows to show about where the following numbers fit on this number line:

| 0.384 | 0.0657 | 0.70234 | 1.4285714 | 1.59784 |
| A | B | C | D | E |

Back-to-Front Maths
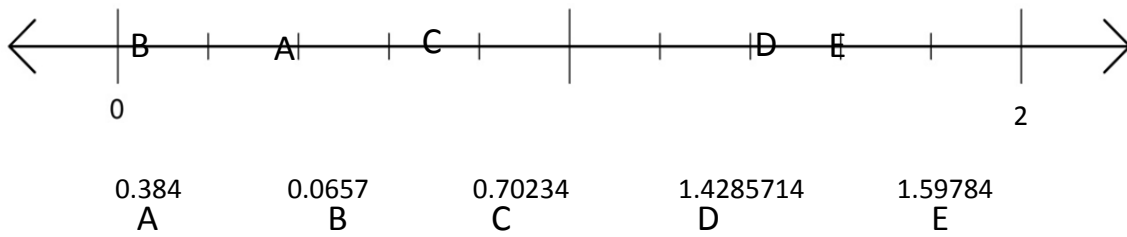
Days 3 and 4: Operations in context

1. At the end of the day I had two $20 notes, three $5 notes and 65 cents in coins. During the day I had bought clothes for $45.00 and lunch for $5.50. How much money did I start with?

    $106.15

2. I'm having a party. 8 people (including me) will be there. Everyone needs to have 3 cups of drink. One bottle holds 5 cups. How many bottles do I need to buy?

    5 bottle to buy to make 24 drinks

3. Each person drank half a glass of juice. There were nine people. How much juice was drunk?

    4 and 1/2 glasses

4. 57 customers were served over a period of one and a half hours. What is the average number served per hour?

    38   (57/3 x 2)

5. The store served on average one and a half cakes every 10 minutes. How many did they serve in an hour?

    9 (1.5 x 6)

6. Each person at a party needed 3 pieces of pizza. Each pizza had 8 slices. If I have 6 guests, how many pizzas do I need to order?
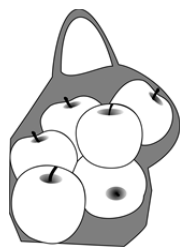
    18 slices of pizza = 3 pizzas need to be ordered

7. After my cents were rounded to the nearest 5c, I paid $7.05. What **could** the total have been before the money was rounded?
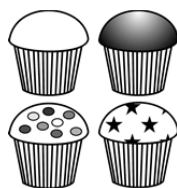
    7.03, 7.04, 7.05, 7.06, 7.07

8. Apples cost $3.98 per kilogram. About how much money would it cost me to buy three kilograms of apples?
    a. $4
    b. $9
    X. $12
    d. $20

9. Cupcakes cost $8.05 per packet of four. If I was splitting the cost with my friends so that we each got one cupcake about how much should we each pay?

    a. $3
    X b. $2
    c. $1
    d. $4

10. I want to work out the minimum distance that I walk in a day for a new exercise program that I am trying. In the mornings I walk 3.87km. In the afternoon I walk 2.10km. In the evening I walk 4.75km. What is the approximate minimum distance that I walk each day?

    A. 9km   X B. 10km   C. 11km

11. My bank balance was $100. I spent $24.89 on clothes and $30.12 on groceries. How much money do I have left approximately?

    A. $55   B. $54   X C. $45   D. $46

12.

$$7\boxed{\begin{array}{|c|c|c|}\hline 1 & 3 & 1\\\hline\end{array}}$$

$$-\begin{array}{cccc} & 3 & 8 & 7 & 5\\ \hline & 3 & 2 & 5 & 6\end{array}$$

```
H T O
3 2 8
+ 1 3 7
-------
4 6 5
```

```
  6 8
x   7
------
4 7 6
```

```
      3 . 2
6 | 19.2
```

```
H  T  O
8  1  2
x     4
---------
3 2 4 8
```

```
  3 rem 2
5 | 17
```

13. I started with a certain bank balance. Work paid me $75.85. After I was paid my bank balance was $265.90. What was it before I was paid? $190.05

14. I had a ream of fabric for making dresses with. I used up 1.5m on the first dress. I had 2.7m left. How much fabric was on the ream to start with?   4.2m

15. For my birthday party I bought 3 x 2L bottles of soft drink. Each bottle can serve 5 people. If I have invited 23 people to my party, how many more bottles do I need?

2 more

16. What number has the following as multiples: 36, 50

2

17. What number has the following as factors: 1, 2, 3, 4, 5, 6

60

18. For each of the following questions circle the most appropriate answer from the group.

1. 3 chocolate bars were split between 2 people. How much chocolate did each one receive?

A. 1.5 bars each ✗ B. 1 ½ bars each C. 1 bar each and 1 remainder

2. Gerard ran four 100m races in 54 seconds. How long did he take to run each one?

✗ A. 13.5 seconds each B. 13 $^2/_4$ seconds each C. 13 seconds each, remainder 2

3. Four people had to divide 9 books between them. How many books did each person get?

A. 2.25 books each B. 2 ¼ books each ✗ 3. 2 books each and 1 remainder

19. Some friends shared jelly beans between them. They started with 33 jelly beans. When all the jelly beans had been shared each person had 5 jelly beans and there were 3 left over. How many friends were there?

6

Day 5: Number Patterns and Equations

1. In each soccer game we scored two more points than the other team. If the other team's scores were: 0, 2, 1, 2, 3, how many points did we score altogether?   **18**

2. Some strings of beads have been drawn below. Your job is to draw the next three beads on the right for each one, and the next one bead on the left.

grey   ○●○○●○●○○●○●   white white grey

grey   ○○○○●○○○●○○●   white grey white

3. There are six possible boxes. The right box weighed twice as much as one of the lighter boxes and three times as much as another.

A	B	C	D	E	F
400g	450g	300g	800g	**X** 900g	460g

4. Jemma has drawn 10 counters from a bag. 3 are red, 2 are blue, one is black and the rest are green. Using the key below, what would she end up with if she tried to swap as many counters as possible for red? Draw the counters that she would have

   1 red counter = 3 green counters.
   1 black counter = 4 red counters.
   1 blue counter = 2 red counters.

   R R R (original)
   R R R R (from the blue)
   RRRR (black)
   R G (from the 4 green)

5. I halve my mystery number then subtract 3 to get 2. What is it?

   10

6. Starting with my mystery number, I double it, then add two, then halve it and am left with 4. What is the mystery number?

   3

7. Fill in the box with a number to make the number sentence correct

   $74 - 25 < \boxed{7} \times 8$ Any number greater than 7

8. The aim of this game is to exchange all of your counters for ones of the same colour, and to work out who has the most value. The exchange rates are listed below, and some scenarios are given. Which one of the following collections would you choose so that your collection had the highest value if every green counter is worth $1?

Exchange rates:

1 red counter = 3 green counters

1 black counter = 2 red counters

R G G

RRRRR

R G G   R R   RR RR

R   RRRRR   R   RRRRR

R R

R   RR RR

9. A pattern was made using the following rule: subtract 3. If the last number in the pattern was 14, what were the previous 3 numbers? What would the next 2 numbers be?

17, 20, 23 are the previous 3, then 11 and 8 are the next 2

10. 3, 11, 19, 27, 35, 43, 51, 59

What is the rule?   Add 7

11. 2, 6, 18,_____ , 162, 486, _____   Multiply by 3

12. The rule is 'add 12'. Fill in the blanks:

7 , 19 , 31, 43 , 55

13. Monika watches 2 hours more TV than Jack. Use this to complete the table:

Jack's TV hours	2	3	4	5	6
Monika's TV hours	4	5	6	7	8

Back-to-Front Maths

Day 6: Fractions 1 – Basic concepts

1. These cakes are all cut in half. They are the same size as each other. Which half is the biggest?

They are the same

2. This is one half of a shape. What could the original shape have looked like?
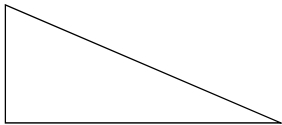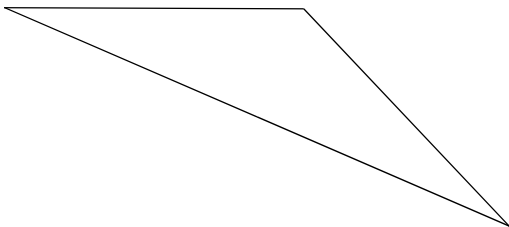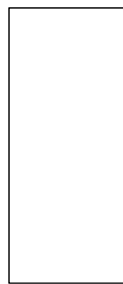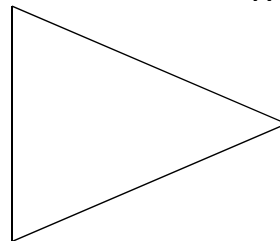
A.   B.   C.   X D. all of them

3. Half of a collection of shells was four shells. How many were in the collection?

   A. 1   B. 2   C. 4   X D. 8

4. The following pictures show one half. Draw the whole.

Rectangle   Line   Lollies

5. Is it possible to have three halves? Explain and draw a picture: Yes makes 1 and 1/2

6. Rohan was four and a half. How old will he be on his next birthday?

        A. 8   B. 4   **X** C. 5   D. 9

7. One quarter of a collection of shells was two shells. How many were in the collection?

     X A. 8   B. 4   C. 6   D. 10

8. Some chocolate is shown below. How many pieces make up one quarter of the chocolate?

    A. 1
    B. 4
 X C. 3
    D. 2

9. What fraction of the shape below is shaded?

    A. One half
    B. One third
 X C. One quarter
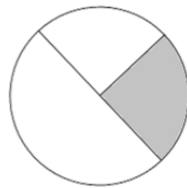
Day 7: Fractions 2

1. Two thirds of a collection of shells was four shells. How many shells are in the whole collection?

    6

2. Place the following fractions onto the line in their correct position:

    0, ½, ¼, ¾, 1 ½, 1 ¾, ⅛, 1 ⅜, ⅝, ⅞, 1

    ← ——————————————————————————————————— →
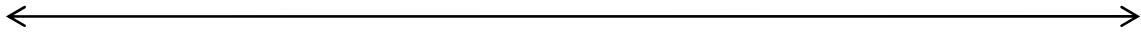
3. What fraction of the group of glasses below is full?
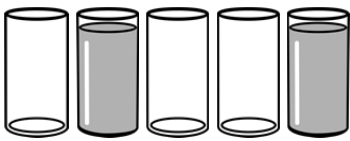
    A. 2/3   B. 3/2   Χ C. 2/5   D. 3/5

4. My friends were arguing about whether 1/4 or 1/5 was bigger. Jen said 1/5 was bigger because 5 is bigger than 4. Belle said 1/4 was bigger because the whole was broken into less parts. Who is right? How do you know?

    Belle

5. How many tenths could you use so that the fraction was the same size as one half? How many sixths? How many eighths? 5 tenths, 3 sixths, 4 eighths

6. On the line below, work out where each of the following fractions go:

    Two, one half, one third, two thirds, one whole, five thirds, two quarters, three quarters, seven quarters, two and one quarter, three fifths

    ← ——————————————————————————————————— →
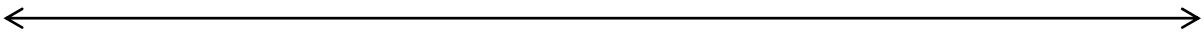
    0   3

Day 8: Fractions 3

1. Some kids were playing in the pool. One third of the group went and bought ice creams. There were 4 kids who bought ice creams. How many didn't buy ice creams?

   8

2. If I ate ¾ of a pizza and my friend ate ¾ of another pizza, how much pizza did we eat altogether? How many whole pizzas did we need to buy?

   1 and 1/2 pizzas left.

   Bought 1.5 copies
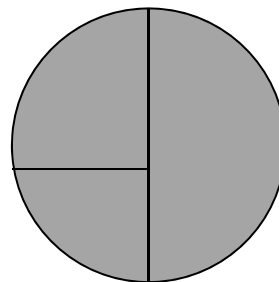
3. What fraction are these pictures showing? Can you work them out?

   half or 2/4
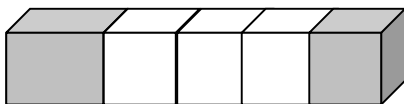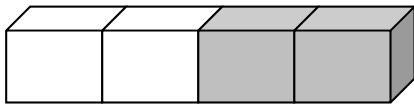
   A whole.

   Not even!

4. Jack got 90% on his test. The test had 50 questions. How many did he get wrong?

   5

5. Danielle found that she could make 12 ¼ cookies from each batch of dough. How many batches do you think she cooked to work this out? How many cookies is this?

   4 batches

   50 cookies

6. The picture below shows how a mocktail is mixed in a glass. The glass has three layers. The darkest grey layer is the orange juice. What decimal number represents the fraction of orange juice?
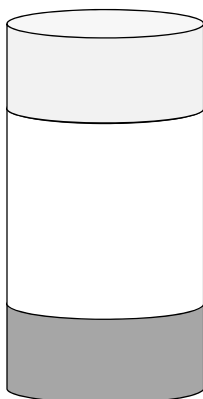
   A. 1.3
   B. 0.14
   C. 0.13
   X D. 0.25

Days 9 and 10: Chance and Data

1. If an experiment gave the following results for 40 spins of a spinner, draw what you think the spinner might look like:

    Red: ⵍⵍ ⵍⵍ ⵍⵍ ⵍⵍ ⵍⵍ ⵍⵍ

    Blue: ⵍⵍ ⵍⵍ
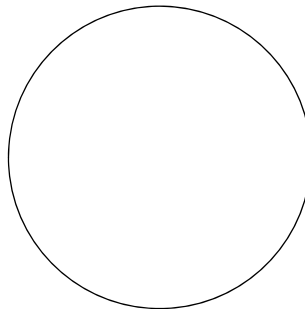
    3/4 red, 1/4 blue

2. What fraction of the spinner is red?

    3/4

3. If you were to double the chance of getting a blue result, how would that change your fractions? 3/5 red 2/5 blue

4. If I had included the following questions in a survey, what do you think the aim of the survey would be?

    How do you travel to work in the morning?

    How often do you use public transport to get to work?

    Aim of survey:

    Analyse public transport and what to do about it.

5. A class of 20 students took a survey about their favourite colours. The same number of students liked red, blue and yellow. Two students liked green. Fill in the tally chart below.

Red	
Blue	
Yellow	
Green	I I

    6 in each row

6. Students were using the following spinner. Which of the following scores is impossible if a student had 4 spins?
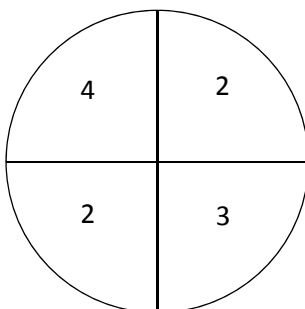
    A. 16   B. 11   C. 10   X. 7

7. The following graph shows the results from a survey about students' favourite colours.

Our favourite colours:
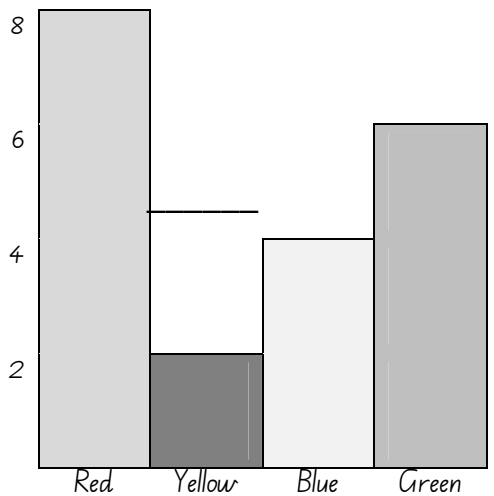
Questions:

1. How many children were surveyed altogether?   20

2. What colours did half the children choose?   Red and Yellow, or Blue and Green

3. Three more children gave answers. They all chose yellow as their favourite. Add this to your graph.

8. Which of the following information can be interpreted from this graph?

Anita's budget per week: $200
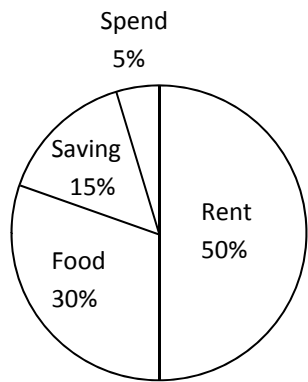
X   A.   Anita should save more money

    B.   Anita spends $170 per week

    C.   Anita spends 5% of her income

    D.   Anita spends $30 per week on food

9. The following data was collected by a grade 4 class about what pets students had. Use the table to work out which bar graph is the right one to include.

Our pets:

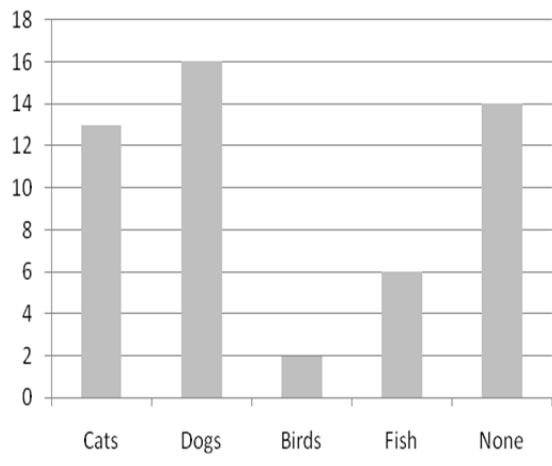| Cats	13
Dogs	16
Birds	2
Fish	5
None	14

Our Pets A
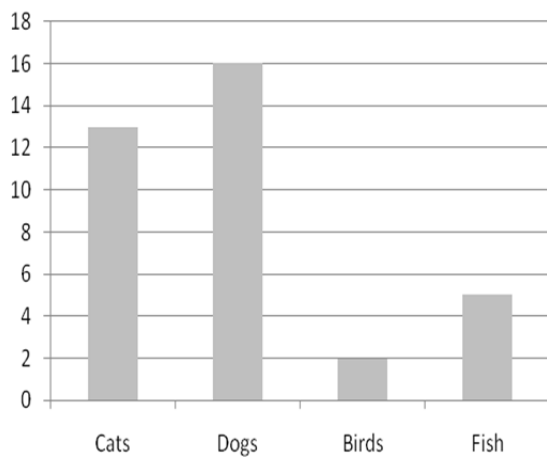
Our Pets B
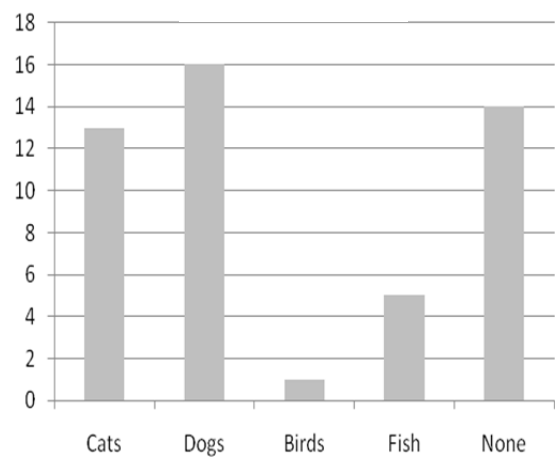
Our Pets C

Which of these graphs do you think is correct? Explain your answer:

Use a pencil to correct the incorrect graphs.

Day 11: Measuring length, area and volume

1. Which of the following shapes uses the most blocks?

   Shape 1: Base length: 4 MAB, Base width: 2 MAB, Height: 5 MAB

   Shape 2: Base length: 5 MAB, Base width: 2 MAB, Height: 4 MAB

   Shape 3: Base length: 3 MAB, Base width: 2 MAB, Height: 6 MAB

   Shape 4: Base length: 4 MAB, Base width: 3 MAB, Height: 3 MAB

2. You have been given the following recipe for **Grade 5 Cordial Concoction:**

   5mL each of lemon cordial and lime cordial
   10mL each of raspberry cordial and black currant cordial
   220mL cold water

   If you increased the volume of lemon cordial to 20mL, and increased everything else to match so that the ingredients were in the right ratios, what volume of cordial would you have once it was all mixed together?

3. Ryan was preparing to send a parcel overseas. In the parcel he had the items listed below. Work out how much it would cost for Ryan to send his parcel.

   Contents of the parcel:
   - Toy car (weighs 55g)
   - Small doll (weighs 125g)
   - Pencils pack (weighs 28g)

   The box itself weighs 50g when it is empty.

   Costs for sending a parcel overseas:
 $5 for the first 100g, then $3 for every 100g (or part thereof) after that.

4. If the distance around a square measured 50cm, how long would one of the sides be?

5. A rectangle was twice as long as it was wide. Its perimeter was 12. How long and how wide was it?

6. If the area of a rectangle was 12, what could its perimeter be?

7. Your soccer team had a 10L drinks cooler for the team to use. If there are 9 kids on your team, how much water does each person get?

8. For the shapes below: work out how many cubes there are and then work out how many squares there are on the outside.
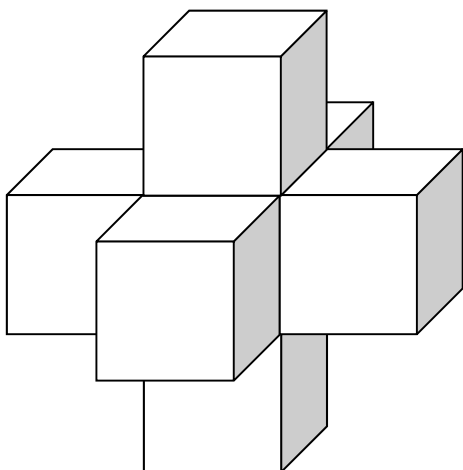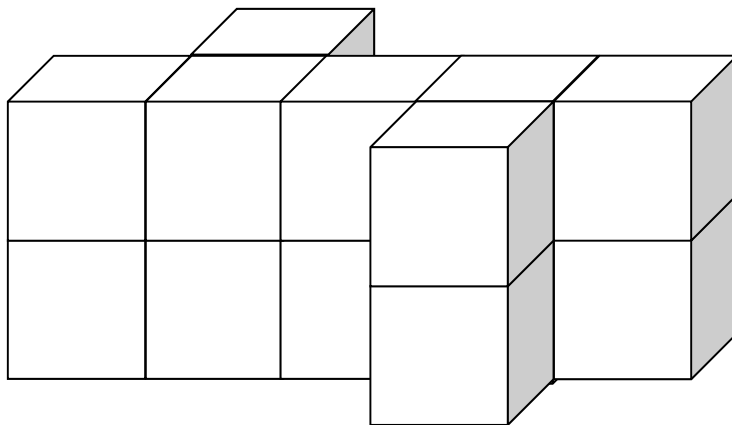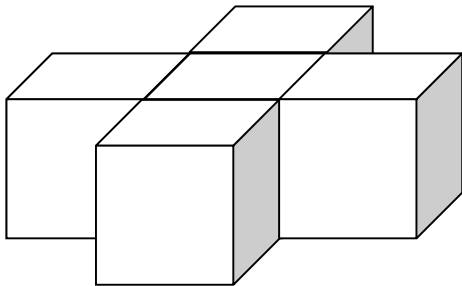
9. If 20 shoes placed heel to toe fit across the length of your classroom, about how long would it be in metres? Explain how you worked it out.

10. For each of the measuring instruments below, which gradation is wrong? Why?
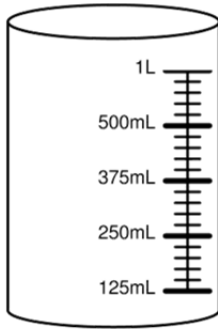
11. If the distance around a square measured 40cm, how long would one of the sides be?

12. My toy weighed 125g. Corey's car weighed more than my car, but less than Jenny's car. Jenny's car weighed less than Nick's car. If Jenny's car weighed 170g, what could Corey's and Nick's cars each weigh?
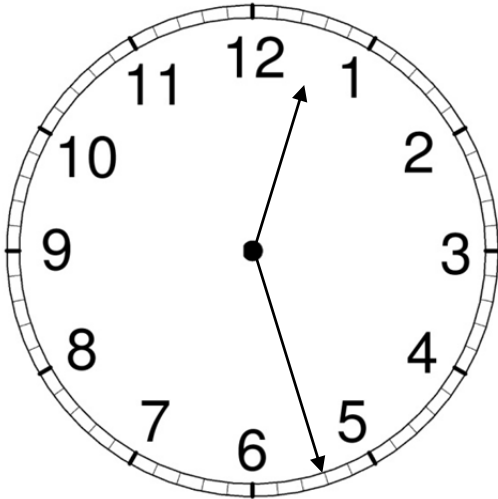
13. One tile measures 20cm x 10cm. The diagram below shows how it looks in your cupboard.

   How long and how wide is the cupboard?
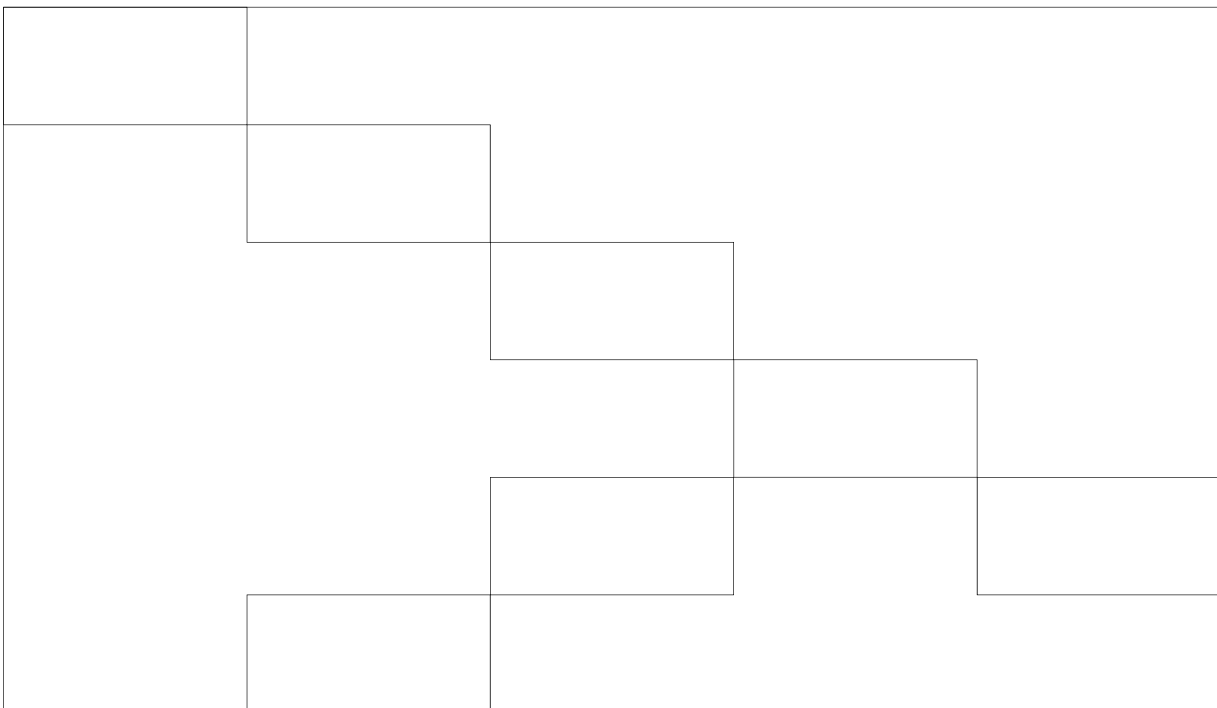
Day 12: Time

1. Paul's dad needs to leave home **1 hour and 15 minutes before** school ends so that he gets to school in time to pick Paul up. School ends at 3:05pm. Look at the time on the clock below.

    How long does Paul's dad have before he has to leave?

2. If I needed to leave the house at 14:25, but wanted an alarm to go off 34 minutes before I left, what time would I set the alarm for? Draw it:

Back-to-Front Maths   www.backtofrontmaths.com.au
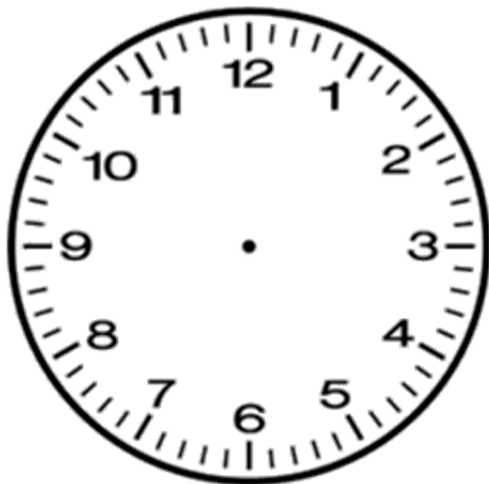
3. Starting from 7.01.05 James paid rent every fortnight. Circle in black the days that James paid rent. Which of the following is a date on which James would pay rent?

January 2005	February 2005	March 2005	April 2005
S M T W T F S	S M T W T F S	S M T W T F S	S M T W T F S
1	1 2 3 4 5	1 2 3 4 5	1 2
2 3 4 5 6 7 8	6 7 8 9 10 11 12	6 7 8 9 10 11 12	3 4 5 6 7 8 9
9 10 11 12 13 14 15	13 14 15 16 17 18 19	13 14 15 16 17 18 19	10 11 12 13 14 15 16
16 17 18 19 20 21 22	20 21 22 23 24 25 26	20 21 22 23 24 25 26	17 18 19 20 21 22 23
23 24 25 26 27 28 29	27 28	27 28 29 30 31	24 25 26 27 28 29 30
30 31			

May 2005	June 2005	July 2005	August 2005
S M T W T F S	S M T W T F S	S M T W T F S	S M T W T F S
1 2 3 4 5 6 7	1 2 3 4	1 2	1 2 3 4 5 6
8 9 10 11 12 13 14	5 6 7 8 9 10 11	3 4 5 6 7 8 9	7 8 9 10 11 12 13
15 16 17 18 19 20 21	12 13 14 15 16 17 18	10 11 12 13 14 15 16	14 15 16 17 18 19 20
22 23 24 25 26 27 28	19 20 21 22 23 24 25	17 18 19 20 21 22 23	21 22 23 24 25 26 27
29 30 31	26 27 28 29 30	24 25 26 27 28 29 30	28 29 30 31
		31	

| September 2005	October 2005	November 2005	December 2005
S M T W T F S	S M T W T F S	S M T W T F S	S M T W T F S
1 2 3	1	1 2 3 4 5	1 2 3
4 5 6 7 8 9 10	2 3 4 5 6 7 8	6 7 8 9 10 11 12	4 5 6 7 8 9 10
11 12 13 14 15 16 17	9 10 11 12 13 14 15	13 14 15 16 17 18 19	11 12 13 14 15 16 17
18 19 20 21 22 23 24	16 17 18 19 20 21 22	20 21 22 23 24 25 26	18 19 20 21 22 23 24
25 26 27 28 29 30	23 24 25 26 27 28 29	27 28 29 30	25 26 27 28 29 30 31
	30 31		

4. Jared's birthday was on August 13th. If he started planning his party 28 days before then, when did he start planning it?

5. James fell sick and had 23 days off work. If he went back on November 15th 2005, when did he work last before going on sick leave?

6. Find the mistakes in the timetable below. Circle them.

	Time	Class
Monday	9.30-11.00am	General
	5.15-6.45pm	Beginners
	6.45-8.10pm	BEGINNERS COURSE*
Tuesday	6.15-7.45am	Early Morning
	5.00-6.30pm	General
	6.30-8.10pm	Beginners
Wednesday	9.30-11.00am	General
	5.15-6.45pm	Beginners
	6.45-8.10pm	BEGINNERS COURSE*
Thursday	6.15-7.45am	Early Morning
	5.00-6.30pm	General
	6.30-8.00pm	Beginners
Friday	6.00-7.30am	$8 Beginners/General
	9.30-11.00am	Advanced
	5.30-7.00pm	Beginners
Saturday	8.30-10.00am	Advanced
	10.00-11.30am	General
	1.15-2.45pm	BEGINNERS COURSE*

Days 13 and 14: 2D and 3D shapes

1. Which of the following shapes could not be made from four blocks that could connect to each other by their faces?
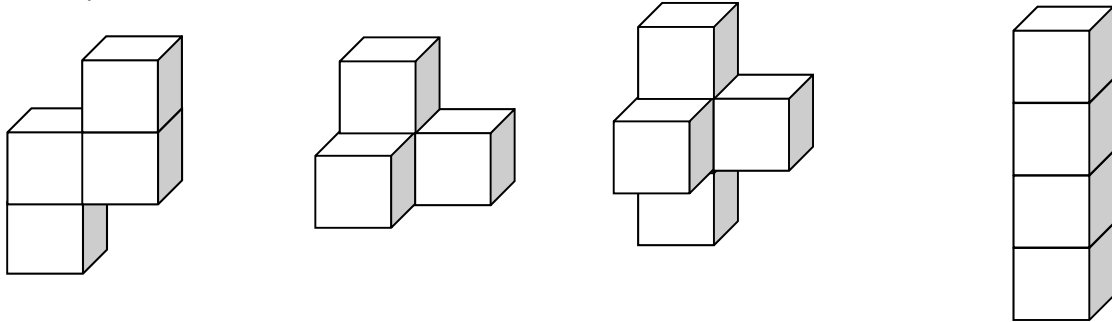
2. Shapes can sometimes fit into multiple categories. Examine the shape below. Which of the category would it NOT fit into?
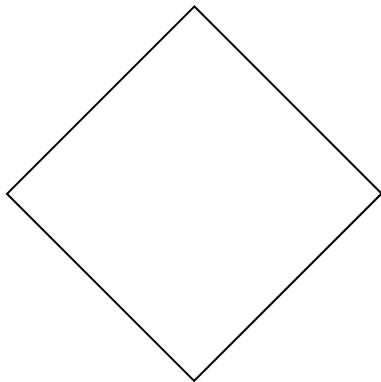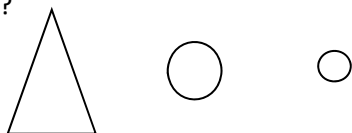

Square

Cube

Rectangle

Quadrilateral

3. If a pyramid had a pentagon on the base, how many edges would it have?
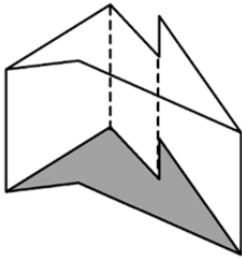
4. A shape had 5 faces. Name two possible 3D shapes that it could be.

5. The following are pictures of a 3D shape sliced through the middle at various angles.
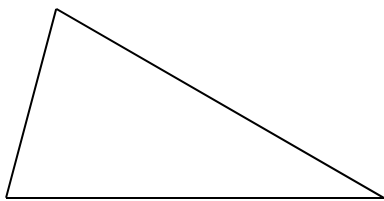
What shape it?

6. If you were going to add the following shape into your categories, where would it go? Would it be a pyramid, a prism, a cylinder or a cone?
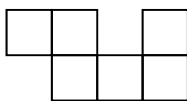

7. What type of triangle is pictured below?

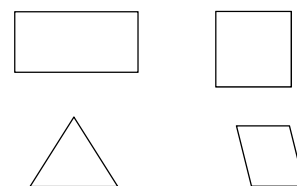   A. Isosceles   B. Scalene   C. Equilateral   D. Right-angled
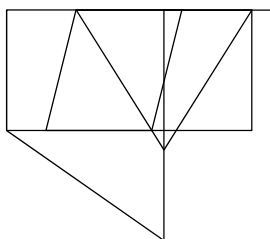

8. Is it possible to make the following? Give reasons for your answers.
- A prism with a hexagon for a face?

- A pyramid with a hexagon for a face?
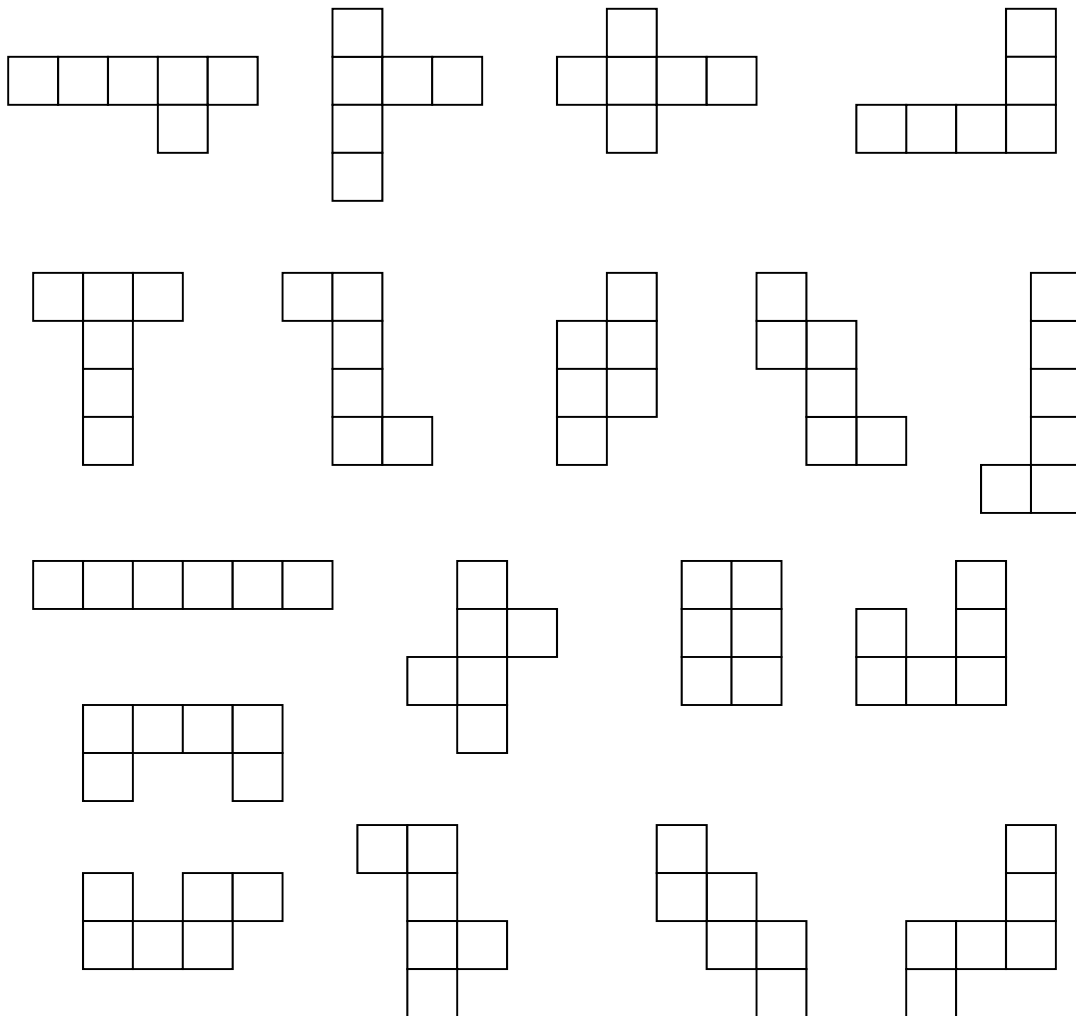
- A cube with a hexagon for a face?

9. What shape is formed by the following net?

10. The following picture has been created by shapes. Which of the shapes below is not in this picture?

11. Examine the diagrams below and circle the nets that would fold to give a cube.

12. Design a shape from 4 cubes that has 18 squares on the outside. Draw it in your maths books.

Back-to-Front Maths

Day 15: Maps and directions

1. Using the map below, describe the process of walking along the road from the School at M1 to the Golf course. Make sure that you refer to landmarks as well as the distance and direction.


```
0    Scale   500m
```

KEY
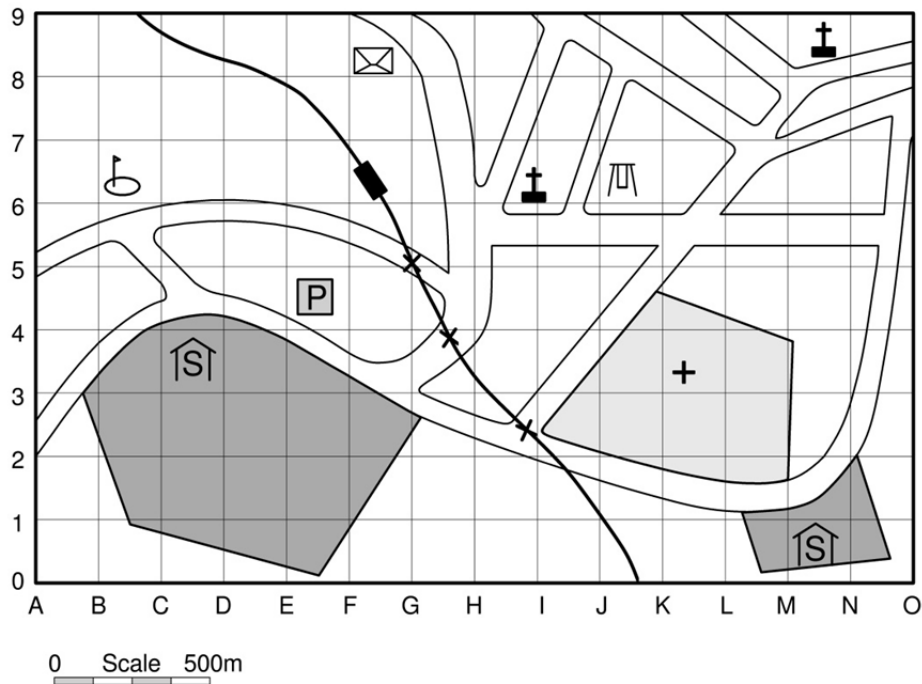
⌂S⌃	School	─✕─	Railway crossing	⊠	Post office
⊥	Church	─■─	Railway station	+	Hospital
P	Police	⛳	Golf course	⊓	Playground

2. Jemma is now sitting in the middle and facing the triangle. To get to that direction she started by turning a half turn, then a quarter turn clockwise, then another half turn. Which shape did she start off facing?
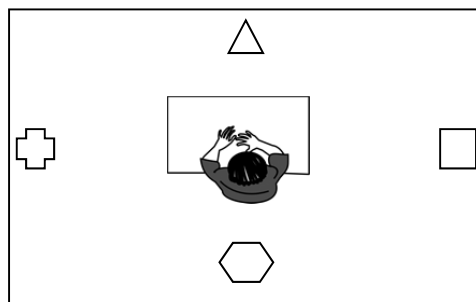
3. If Robbie starts by facing the South and turns a half-turn, which direction is he facing?

4. If Maeka starts by facing the East and turns a quarter-turn clockwise, which direction is she facing?

5. If Jeanne starts by facing the West and turns a half-turn, and then a quarter-turn anticlockwise, and then another half-turn, which direction is she facing?