Diagnostic Tasks

For Addition and Subtraction

How many 1? Prep – 3
How many 2? Yr 3 – 6
How many 3? Yr 6 – 9

Purpose: To see how students represent addition and subtraction problems.
Teacher Instructions: Problems can be read to students. Students should be offered items to assist them in the following order:

- Pencil and paper
- Calculator
- Blocks or counters
- Realistic objects (eg cards, lego people etc)

Empty boxes Yr 4 - 9

Purpose: To determine if students understand the relationship between addition and subtraction.
Teacher instructions: Reinforce to students that they are to write what they would put into a calculator to solve the problem – not the answer.
Students **are not** to be given a calculator.

For Multiplication and division

Cupcake Problems 1 Prep - 4
Cupcake Problems 2 Yr 2 – 5

Purpose: To find out how students represent multiplication and division problems.
Teacher instructions: Problems can be read to students. Students should be offered items to assist them in the following order:

- Pencil and paper
- Calculator
- Blocks or counters
- Realistic objects (eg cards, lego people etc)

Calculator Number Sentences Yrs 4 – 9

Purpose: to find out if students choose the correct operation when solving a range of multiplication and division problems.

Buying Apples Yrs 6 – 9

Purpose: To find out if the numbers effect the operation that students select.
Teacher instructions: If possible the student should complete each question at different times throughout the week.

Diagnostic Tasks

Sorting Shapes 1 & 2 (Prep – 2)

Purpose: To reveal if the student sorts a collection of objects based on spatial characteristics.
Teacher instructions: Each student is given a set a shapes (Sorting Shapes 1 or 2) and a larger (A3) blank sheet of paper.

Teacher Asks:

1. Could you put these into groups of things that are the same?
   You can make as many groups as you want?

2. Can you give me a name for each group?
   Write the name of each group beside each group.

3. Can you tell me why you put these figures together?
   Write the reason beside each group.

See the Parts 1 (Yr 3 – 5)

See the Parts 2 (Yr 5 – 9)

Purpose: To reveal if students identify the parts and the whole of shapes and objects in different orientations.

How many 1 ?

Name ..... Year .....

Work out the answer to each story problem. Show how you worked it out.

1. Allison has 7 Woolies animal cards. Her Aunty gives her 5 more cards. How many does she now have?

2. Rachel has 12 pet fish. She has 7 gold fish and the rest are fighting fish. How many fighting fish does Rachel have?

3. There are 5 boys and some girls at dance practice. All the boys take a girl as their partner. There are 2 girls without partners. How many girls are there?

4. Mark is 7 years old. Elise is 2 years younger than Mark. How old is Elise?

How many 2 ?

Name ..... Year .....

Work out the answer to each story problem. Show how you worked it out.

1. Jenny takes $30 to the bookfair and buys 2 books. If she receives $18.60 change, how much did the books cost?

2. Steven is standing at this signpost.

What is the distance between the train station and the shopping centre?

3. Each student at the school dance is given a can of softdrink and a packet of chips. The organisers have bought 228 cans of softdrink. If 176 students attend the dance, how many cans of softdrink will be left over?

4. At the school athletics carnival Jenny jumps 5.05m in the long jump. Bella jumps 4.75m. How much further did Jenny jump than Bella?

5. Altogether James and Benny have scored 28 goals for their soccer team. James scored 10 more goals than Benny. How many goals did Benny score?

How many 3 ?

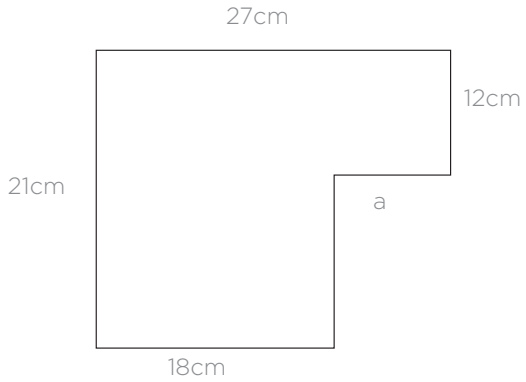
Name ..... Year .....

Work out the answer to each story problem. Show how you worked it out.

1. Jenny buys 2 books at the book fair for $36. If she spent $\frac{3}{4}$ of her money on the books, how much money did she take to the fair?

2. 45% of students in Year 8 are boys. If there are 121 girls in Year 8, how many students are there altogether?

3. What is the length of the side labelled a?



4. The perimeter of a garden 18.9m. Lachlan uses twice as many pavers to edge the length of the garden as the width. If the pavers are 45cm long, how many pavers does Lachlan use edge the longest side of the garden?

Empty Boxes

Name ..... Year .....

What numbers and symbols would you use on the calculator to solve the following problems?

1. 17 + ☐ = 36 .....

2. ☐ - 27 = 34 .....

3. 35 = ☐ + 16 .....

4. 43 - ☐ = 16 .....

5. 462 898 + ☐ = 842 701 .....

6. ☐ - 15.78 = 12.43 .....

7. ¯12 - ☐ = 3 .....

Cupcake Problems 1

Name ..... Year .....

Work out the answer to each story problem. Show how you worked it out.

1. The baker has made 24 cupcakes. He wants to put 4 cupcakes in each box. How many boxes will he need?

2. Jessie is putting 3 M&Ms on each cupcake. There are 8 cupcakes. How many M&Ms will she need?

3. Fran has 18 cupcakes and 6 plates. How many cupcakes should she put on each plate if she wants the same number of cupcakes on each plate?

Cupcake Problems 2

Name ..... Year .....

Work out the answer to each story problem. Show how you worked it out.

1. Lara has 15 cupcakes which she places on a tray. If she places 5 cupcakes in each row, how many rows of cupcakes will Lara have on the tray?

2. Jeff can make chocolate, vanilla, strawberry and choc chip flavoured cupcakes. He uses M&Ms, cherries and sprinkles to decorate the cupcakes. How many different cupcakes can Jeff make?

3. Kate uses 12 M&Ms to decorate 4 cupcakes. How many M&Ms will she need to decorate 20 cupcakes?

4. Coco buys 4 cupcakes for $6. How much will 10 cupcakes cost?

Calculator number sentences 1

Name ..... Year .....

Write the equation to solve each problem.

1. Helen rides at an average speed of 5 kilometres per hour. How far does she ride in 3 hours?	2. Last week at swimming club there were 6 times as many boys racing as girls. There were 18 girls and 36 parents. How many boys were there?	3. John is going to the school dance. He has 4 pairs of shorts and 5 tops. How many outfits could he choose from?
4. The canteen had cooked 400 cakes and needed to put them into boxes of 8. How many boxes would they need?	5. Sara was planting corn. She had 75 seeds and wanted to plant 15 rows. How many seeds are in each row?	6. If a 3 kilogram bag of apricots costs $12.60, what is the price per kilogram?
7. Chicken fillets cost $10.00 per kilogram. Jo buys a tray of chicken fillets for $15.00. How much must the tray of chicken fillets weigh?	8. A picture which has been enlarged three times its original size is now 180mm high. What was its original height?	9. There are 216 lolly snakes in a box. If there are 27 students in the class how many snakes would each child get?
10. Some prizes are hidden for a treasure hunt. Simon found 30 prizes and his sister Sharn found 5. How many times more prizes did Simon find than Sharn?	11. A rectangle of area of 208 m2 has one side 16m long. How long is the other side of the rectangle?	12. The Burger Place is packed with people. There were about 6 people at each table and there were about 36 tables. About how many people were there?

ADAPTED FROM FIRST STEPS IN MATHEMATICS: NUMBER DIAGNOSTICS TASK;
CALCULATOR NUMBER SENTENCES PG 157 (2004)

Calculator number sentences 2

Name ..... Year .....

Write the equation to solve each problem.

1. Sienna has been driving at an average speed of 75 kilometres per hour for 3 hours and 20 minutes. How far has she travelled?	2. In 2006 the average Australian household had 2.6 people. In 1911 the average household was 1.5 times larger. What was the average number of people per household in 1911?	3. A girl and a boy are chosen to be class representatives. If there are 15 girls and 8 boys in the class how many different combinations of class representatives could be chosen?
4. Mrs Scott is organising buses to transport 245 students to the swimming carnival. Each bus has 45 seats. What is the minimum number of buses she will need and how many seats will be empty?	5. Drew is stacking square pavers onto a packing crate. He can fit 7 pavers along the length and 5 pavers along the width. If he has 630 pavers, how many layers high will his stack be?	6. Freya pays $12.45 for 2/5 of a kilogram of cheese at the deli. How much is the cheese per kilogram?
7. Lorraine's car uses 7.8 litres of petrol per 100 kilometres. How far can she travel if she has 50 litres of petrol in her tank?	8. Lexi enlarges her photograph so that it is 4.25 times larger than the original. If the photograph is now 29.75cm high, how high was the original photo?	9. Olive has 1/2 a watermelon. She shares the watermelon equally between 8 people. How much does each person receive?
10. Sierra's batter recipe requires 5 eggs and 3/4 of a cup of flour. If she only has 3 eggs, how much flour should she use to keep the consistency the same?	11. The area of a rectangle is 112.5 m2. The length is twice as long as the width. Find the width of the rectangle.	12. Ruby has picked blueberries from her garden to sell at the markets. She packs them into 36 containers each weighing 250 grams. How many kilograms of blueberries did Ruby pick?

ADAPTED FROM FIRST STEPS IN MATHEMATICS: NUMBER DIAGNOSTICS TASK;
CALCULATOR NUMBER SENTENCES PG 157 (2004)

Buying apples

Name ..... Year .....

Katie bought 4 kilograms of apples.
How much did she pay?
.....
Show how you found your answer.
.....
.....
What would you enter in your calculator to get your answer?
.....
.....

Evan bought 0.4 kilograms of apples.
How much did he pay?
.....
Show how you found your answer.
.....
.....
What would you enter in your calculator to get your answer?
.....
.....

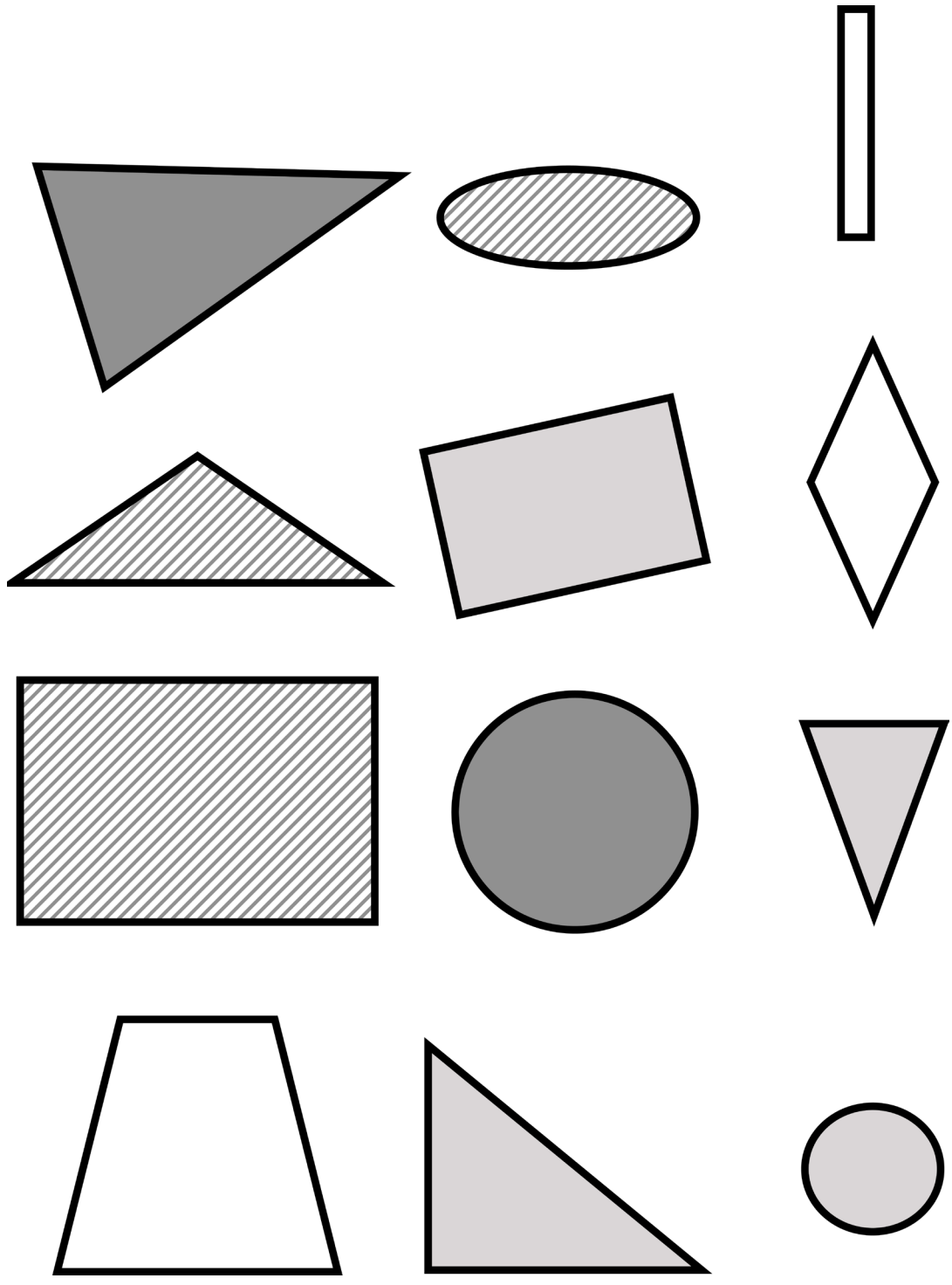
Kaye paid $11.20
How much did she buy? .....
.....
.....
Show how you found your answer.
.....
.....
What would you enter in your calculator to get your answer?
.....
.....

Sally bought 1¾ kilograms of apples.
How much did she pay?
.....
Show how you found your answer.
.....
What would you enter in your calculator to get your answer?
.....
.....

Kevin paid $1.92.
How much did he buy?
.....
Show how you found your answer.
.....
.....
What would you enter in your calculator to get your answer?
.....
.....
.....

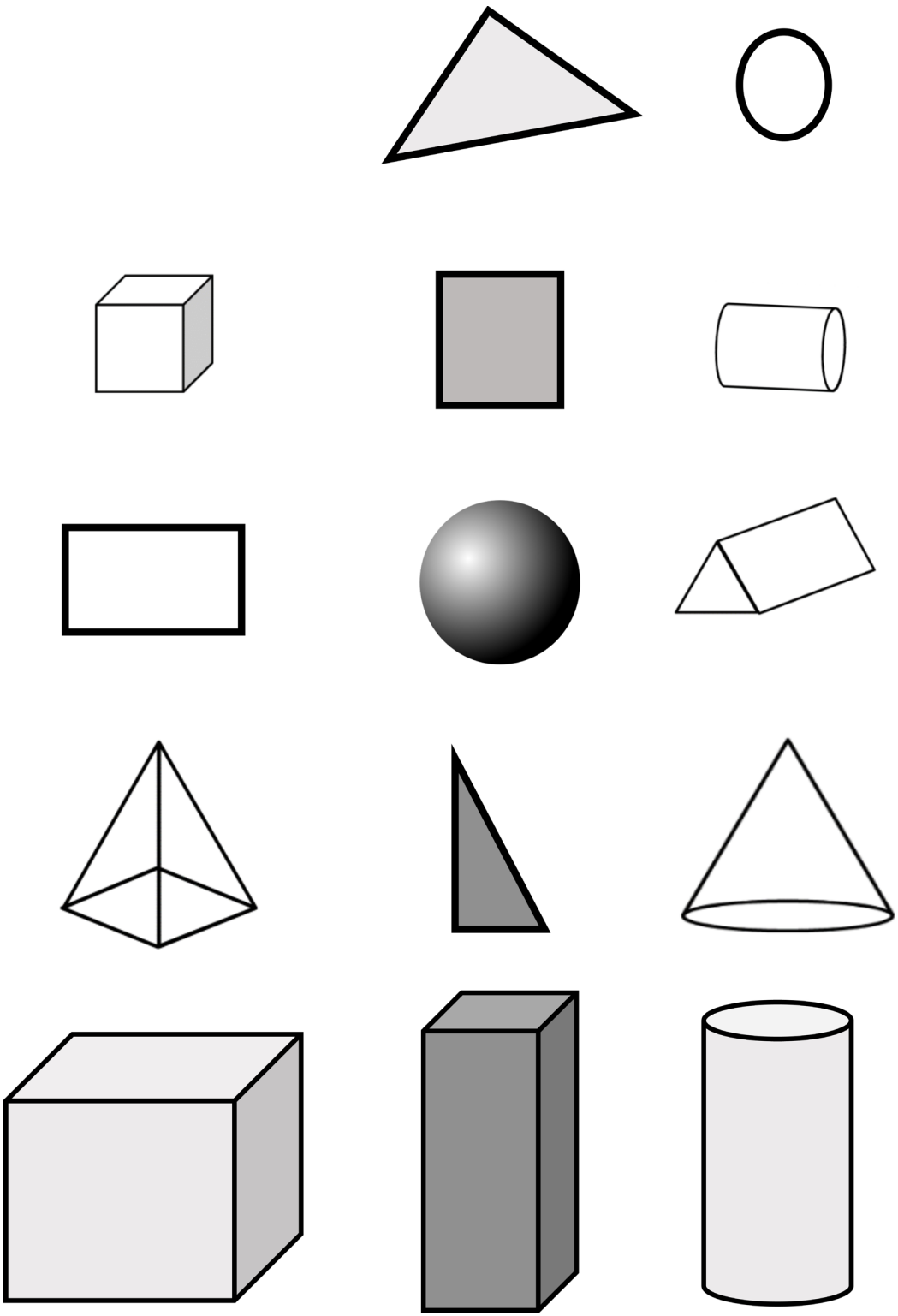
Shape Set 1

Name ..... Year .....



Shape Set 2

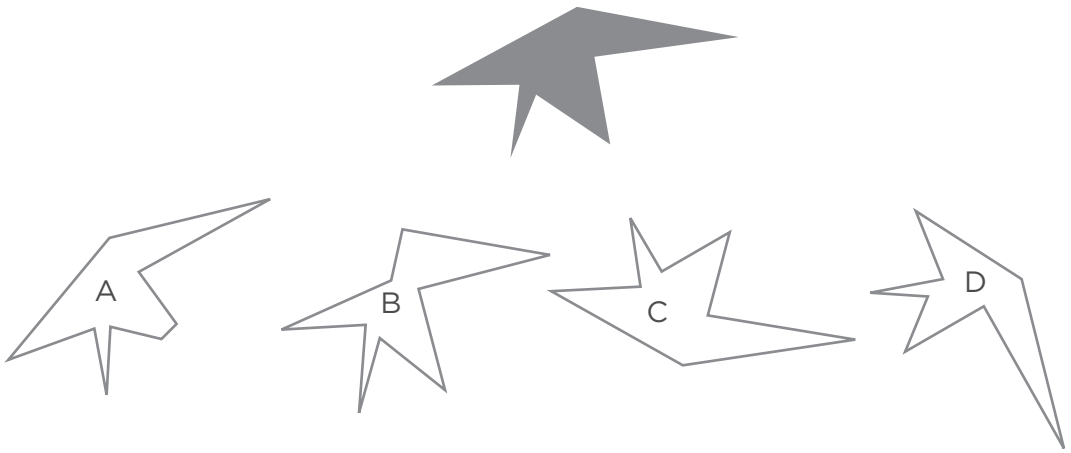
Name ..... Year .....



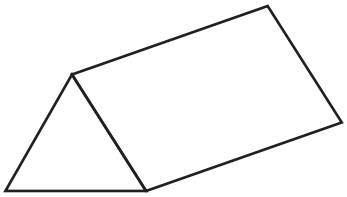
See the Parts 1

Name ..... Year .....

1. Which white shape will fit exactly onto the black shape?
How would you move it so that if fitted exactly on the black shape?

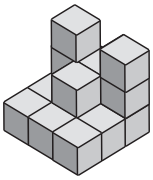


2.



How many edges does this prism have?

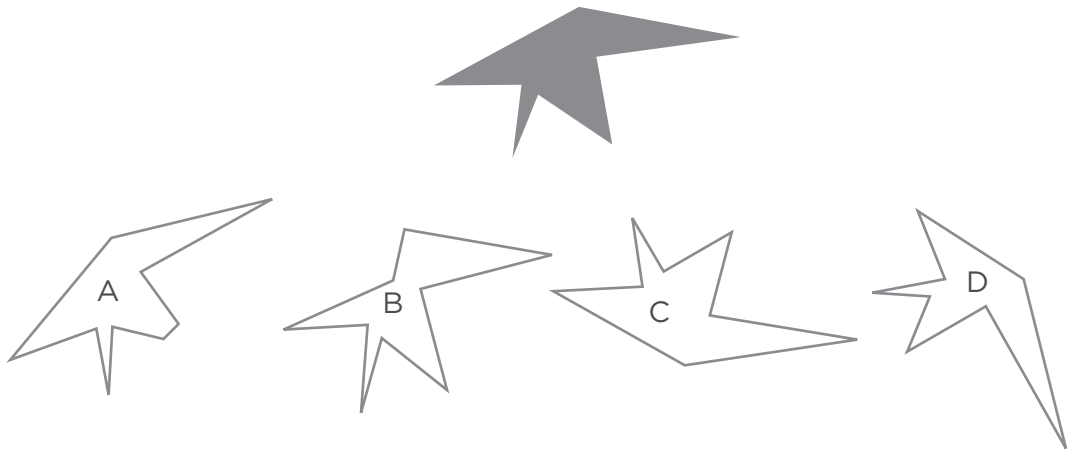
3. How many cubes are needed to make this object?



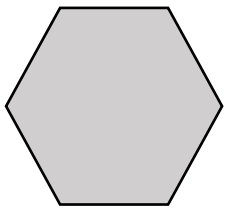
See the Parts 2

Name ..... Year .....

1. Which white shape will fit exactly onto the black shape?
How would you move it so that if fitted exactly on the black shape?



2. This is one face of a prism.



How many edges does this prism have?

3. Draw what this object looks like from the front, side and top.