Week 2 -Package 1 - Year 5 & 6 Mathematics - Multiplication toss

Things you need

Have these things available so your child can complete this task.

Ideal	Back up
1cm square grid paper in your child's mathematics book	Download 1cm square paper or use squared paper that you have in the house.
Different coloured pencils or markers	
Two 0-9 spinners	Check your child's knowledge of multiplication facts. You may want to make spinners that only have the numbers your child can multiply easily to begin with, for example, 2,2,4,4,1,1,5,5,0,0. As your child gets confident with the game you can change the numbers. You can make the spinner by drawing around a ten-sided shape on card. Put a toothpick through the centre to spin with.
Paper clip for spinner	You can make the spinner out of card and use a toothpick through the centre to spin with
Multiplication toss video	You can follow the instructions below.
4 people	2 or 3 people

Why is this activity important?

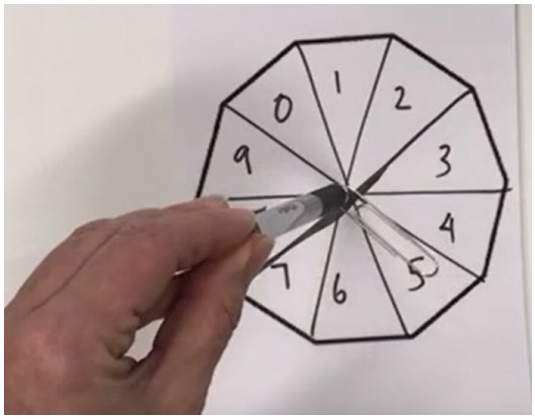
Multiplication toss is an engaging way for your child to practise multiplying with numbers from 0-9. The game will also support your child to represent the multiplication as an array of rows and columns on their grid paper. Your child will also learn that multiplications such as 6 times 3 or 6 groups of 3 will cover the same area as 3 times 6 or 3 groups of 6. As the game progresses and in order to win the game your child will learn that 3 times 6 (3x6) has the same value as 3 times 3 plus 3 times 3 (3x3+3x3). This will improve your child's mathematical reasoning skills and they may want to investigate multiples of numbers even further.

Before you start

It is always a good idea to check which numbers your child can multiply before starting a game like this. Ask some questions such as, “What are 4 groups of 5?” or “What is 6 times 2?” This is not the same as skip counting – 2,4,6,8,10,12 and so on.

Once you are sure which numbers they are confident with, put them on the spinner but also add numbers that your child is learning to multiply by and which they can work out. For example, 3 eights (3 x 8) is the same as doubling 3 fours (3 x 4).

Create the spinners as shown in this video or create your own using this decagon template, some card and a toothpick. Have some squared paper ready for everyone who is playing the game and a collection of coloured pencils or textas.

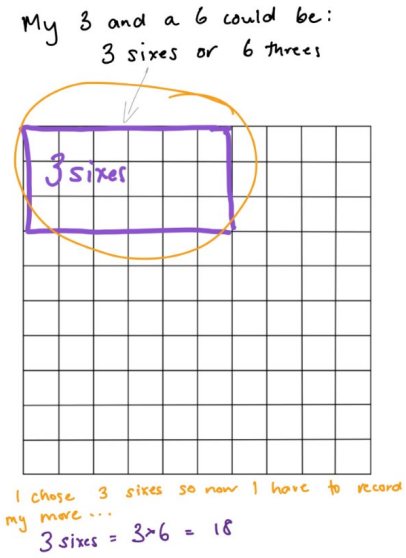


What your child needs to know and do

Your child can watch the video Multiplication toss. Otherwise follow these instructions:

Each player takes a turn to spin both of the spinners. If a 3 and 6 are spun, players can either draw around a block of 3 sixes (3 rows of 6) or 6 threes (6 rows of 3). You may need to show some of the players what this looks like, especially if a younger sibling is playing. Once the array of rows and columns has been enclosed check that everyone has done this correctly and ask how many squares are in the array. Some children may say things like “I know 3 sixes is 18”, or “3 times 6 is 18”. The good thing about this game is that if they don’t know a number fact yet, they can use the game board to help them work it out. They could work out 2 sixes are 12, and then count on the final row of 6, for example.

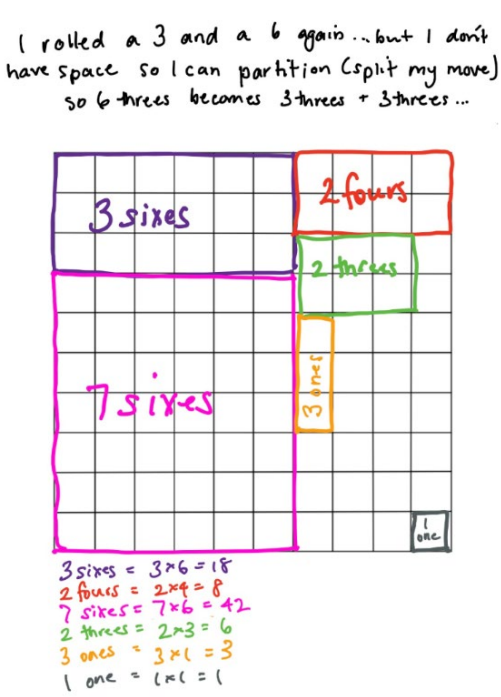
Model how to record your answer.

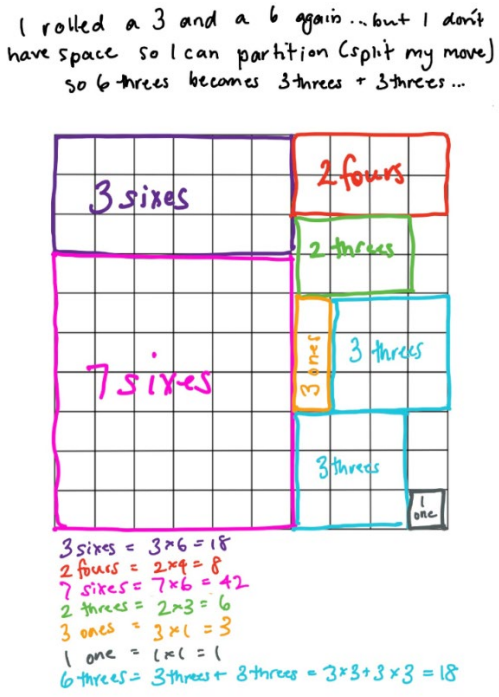


The game continues and players are not allowed to use any of the same squares twice. There are no overlapping areas.

Eventually the space on the grid paper gets really small. Then, players really have to think. It would help your child if you could think aloud about what they could do if, for example, 3 sixes (3 x 6) won't fit anywhere on their paper as one whole array.

"Oh no! 3 sixes won't fit as 3 sixes or as 6 threes. I am going to partition (split) 3 sixes to help to fit into two smaller spaces! I can rename 3 sixes as 2 sixes and 1 six (if that helps me fit the block into my game board). Or I can rename 3 sixes as 1 six and 1 six and 1 six." and so on.





The winner is the player with the largest area blocked out after 10 spins.

What to do next

Once your child knows how to play this game they can continue to play with you, with siblings or even with family and friends online. They won't even need a spinner if they are happy for your child to spin for them.

Options for your child

Activity too hard?	Activity too easy?
Use numbers on the spinner that your child is more confident with. Let your child count the squares in the array by ones or skip counting before giving the answer as a multiplication.	Ask your child to answer the multiplication fact before drawing the array. Ask your child to investigate why some multiples can be made into more arrays than others (**before partitioning**). Which multiple can make the most arrays? Which make the fewest? Which make none at all? Why?

Follow-up questions to ask your child

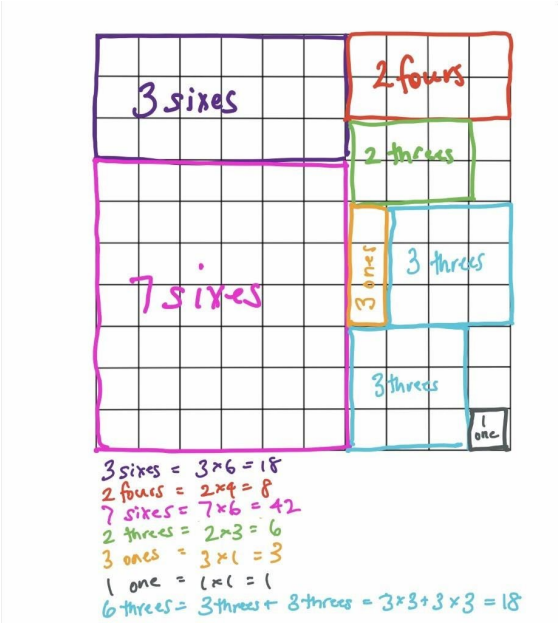
Ask your child to look at the squares left on their grid paper after the game. Would it be possible to fill all of the space with one more spin of the spinner? What two numbers would they need?

If they would need more than one go to cover all the remaining squares on the grid paper, what is the smallest number of goes they would need and which numbers would they need on the spinners?

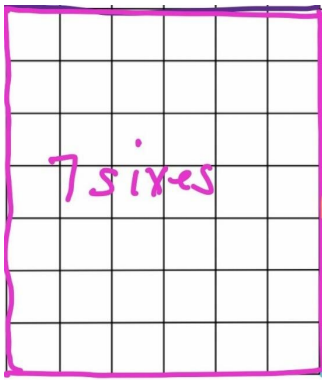
Extension/Additional activity

If you would like to do a further activity with your child, begin by playing multiplication toss again. At the end of the game, ask your child to choose a selected array to investigate the different ways the multiple could be partitioned. If you have access you could watch the video instructions with your child. Otherwise follow the instructions below.

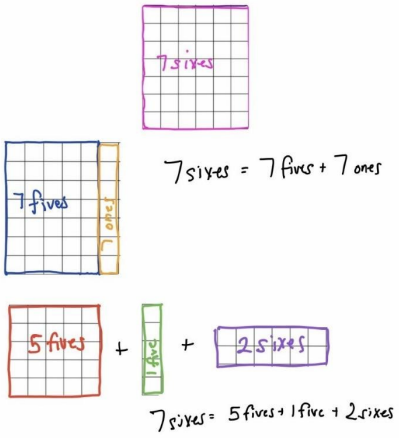
Here is an example of a child's completed game board.



This child chose a 7 sixes section to investigate. It is a good one to choose because there are lots of options for partitioning and renaming the enclosed area. Help your child to choose an area that is going to have some options.



Help your child to use another piece of grid paper to draw and label the different ways their chosen section can be partitioned and renamed. Here are some ideas.



You could also do the activity with your child but choose a different section to investigate. You could make a game of it by competing to find the most ways of partitioning and renaming the area and discuss why some have more options than others.

Week 2 - Package 2 - Year 5 & 6 Mathematics - Baking with fractions

Things you need

Have these things available so your child can complete this task.

Ideal	Back up
Honey Cake recipe (see below)	If your child has allergies you may want to use one of your recipes or find one online that uses **American measurements (cups)**
Recipe ingredients (see below)	Use your own recipe.
Oven, wooden spoon, 18cm square cake tin, wire rack	As required by your recipe
Measuring cups, tablespoon, teaspoon	Conversion measurements if needed.
Oven gloves	Folded over tea towels – parent only
Pages of 1cm squared grid paper from your child's mathematics book.	1cm squared grid paper
A variety of coloured pencils or textas	
Scissors	

Why is this activity important?

This is an engaging and purposeful activity that involves working with fractions. Your child will learn that fractions are used in everyday activities and that fractions of amounts may need to be multiplied or halved depending on how big a cake you are making or how many cakes you are making. They will also investigate equivalent fractions.

Before you start

This is a fun activity that is also an opportunity to spend some time being creative with your child. It is important to allow enough time for the practical activity so that it doesn't become stressful. Also you may want to decide ahead of time who is going to be responsible for cleaning the dishes and who will clean the work space.

Remember this is a shared activity and you will be using a hot oven. If you prefer you could take charge of putting things in and taking things out of the oven.

Make sure you have all of the ingredients and equipment ready for your activity and a damp cloth or two for if things get messy.

You and your child are going to be working with halves, thirds and quarters. It is always useful to check that your child understands what these fractions mean. You could ask them to point half way up a measuring cup, use a knife to mark half across the top of a tub of margarine, or tell you how many eggs take up a third of the spaces in your carton.

What your child needs to know and do

Your child is going to help you make a Honey Cake or another recipe of your choice.

Honey Cake Recipe

½ cup margarine

1/3 cup brown sugar (Muscovado/ Barbados)

3 tablespoons honey

2 eggs, lightly beaten

2 cups of wholemeal flour (plain white will do)

1 tablespoon baking powder

1 teaspoon ground cinnamon

½ cup milk (approximately)

¼ cup sliced/flaked almonds

Cream the margarine and sugar until light and fluffy, then beat in the honey. Add the lightly beaten eggs a little at a time, adding a little of the flour after each addition.

Mix the remaining flour with the baking powder and cinnamon, then beat into the creamed mixture with enough milk to make a soft dropping consistency.

Sprinkle the almonds over the base of a greased 18cm square cake tin. Spoon in the mixture.

Bake in a pre-heated moderate oven (180 degrees C) for 1 hour. Turn on to a wire rack and leave to cool.

What to do next

Before the cake gets eaten, but after the washing up has been done ask your child to draw a square on their grid paper that is 18cm by 18cm.

Ask your child to choose one colour to show how the cake could be shared equally between 2 people using the fewest cuts. How many ways can they show you with one cut?

Go through the same process with different colours on the same sheet for a family of four and a family of eight. What does your child notice? How many quarters are the same as a half? How many eighths are the same as a quarter? Could they have made the task easier by drawing the cuts differently? Ask your child to label pieces of cake that are 1-half (½), 1-quarter (¼), 1-eighth (1/8) and 1-eighth (1/8)

Using another piece of grid paper, ask your child to share the cake for a family of 3 or 6 and label 1-third (1/3), 1-third (1/3), 1-sixth (1/6), 1-sixth (1/6).

Ask your child to look at the two cakes they have drawn. What do they notice? Can they find more equivalent fractions?

Eat (and enjoy) the cake.

Options for your child

Activity too hard?	Activity too easy?
If the activity is too hard stick to halves, quarters and eighths until confident.	Ask follow up 'what if' questions to extend and enrich your child's knowledge such as: What if there were three cakes that needed to be shared between 4 people? What would that look like? Can you draw it? What if there was only one cake to share between 3 people, but one person only wanted half as much as everyone else? How much would they get? How much would everyone else get? What would that look like in a drawing? Ask your child to come up with some 'what if?' questions.

Follow-up questions to ask your child

Ask your child whether it matters which way you cut a square cake into half, quarters and eighths? What if the cake was round?

Extension/Additional activity

Use the same recipe and ask your child to imagine you only have a rectangular cake tin that is 18cm by 9 cm. Discuss how much smaller this cake tin is that the one you used for your cake. They should be able to tell you that it is half the size.

Ask your child to write up the recipe to make a cake that is half of the size. If you have used the given recipe this should not be a problem, but your child may need to go back to their cake drawings to help them work out what half of a half, half of a quarter or half of a third is.

If you have used a different recipe you may have to ask what will happen if the original recipe only calls for half an egg. Does that matter in your recipe or is it a beaten egg? This sort of question helps your child relate fraction problems to real life.

A further activity could be that you need to make 3, 4 or 5 cakes. What changes will have to be made to the recipe? How much of each ingredient would be needed? Would baking like this be practical? Would it be better to make batches?

Week 2 - Package 3 - Year 5 & 6 Mathematics - Let’s get magical!

Things you need

Have these things available so your child can complete this task

Ideal	Back up
Pencils or markers	
Paper	
Numbered cards 0-9	UNO cards

Why is this activity important?

Magic tricks provide great opportunities for students to develop mathematical reasoning and practise their skills in mental computation. This trick is helpful for practising addition and subtraction facts. It also helps students develop skills in choosing efficient strategies for solving addition and subtraction problems. Practising the magic trick multiple times helps students develop confidence, consolidate skills in mental computation and helps them see the maths underlying the magic.

Before you start

You need some pens and a piece of paper.
Numbered cards are required for the optional activities.

What your child needs to know and do

Student needs to be able to add and subtract 3-digit numbers.

Watch the video Let's get magical!

What to do next

- Choose a 3-digit number where each digit is smaller than the previous one (but they don't have to be in order. For example, 982 or 531.)
- Then, reverse the digits and subtract the second number from the first one. So, if I had chosen 531, I would now work out 531 – 135. The answer is 396. (If you get 99, record your answer as 099.)
- Next, reverse your new number. For example, from 396 I can make 639.
- Finally, add these last two numbers together. For example, 396 + 639.
- Here comes the magic...
- The answer is 1089!

Options for your child

Activity too hard?	Activity too easy?
Complete a different magic trick ('Predict your puzzle'), detailed below Try using a different strategy to do the calculations for the magic trick. For example, you might like to use a calculator. Then, explore what happens if you follow the same rules but starting with a 2-digit number (for example, 76 or 82). Complete several times to practice using mental strategies with 2-digit numbers. Then try the trick again with 3 digit-numbers.	Investigate what happens with this magic trick using 4-digit numbers and 5-digit numbers. Complete several times to practice. Work together to explore which mental computation strategies are the most efficient when adding and subtracting. You can also work together to investigate how this magic trick works!

Follow-up questions to ask your child

- Try another starting number and test it out again...is the final answer still 1089?
- Explore what happens if you use the same process, starting with a 2-digit number or a 4-digit number...
- What do you notice about the final answer?
- Why do you think this might be happening?

Extension/Additional activity

Now try this magic trick!

'Predict your number' puzzle

1. Choose a number in the grid and circle it.
2. Choose another number which is not in the same row or column as the first number and circle it.
3. Pick a third number which is not in the same row or column as either of the other numbers you have circled.
4. Pick a fourth number which is in no other column or row as the other circled numbers.
5. Add all 4 numbers which are circled together.
6. You answer is 34.

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16

7. Try this puzzle again.
8. Share it with a family member.
9. Explore....how does this work?

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16

Example: 3 + 8 + 10 + 13= 34

Week 2 - Package 4 - Year 5 & 6 Mathematics - Basketball Toss

Things you need

Have these things available so your child can complete this task

Ideal	Back up
pair of socks	Any soft object (stuffed toy, sponge)
basket, bucket or container	
a clear space	
pencils or markers	
Paper to record	

Why is this activity important?

Chance activities provide fun opportunities for children to experience the elements of probability. Children use a variety of ways to record their scores and represent it in a graph. Drawing graphs allow us to present information in ways which makes it easier for other people to see what we discovered. It also allows us to interpret what we saw and draw conclusions.

Before you start

Make sure:

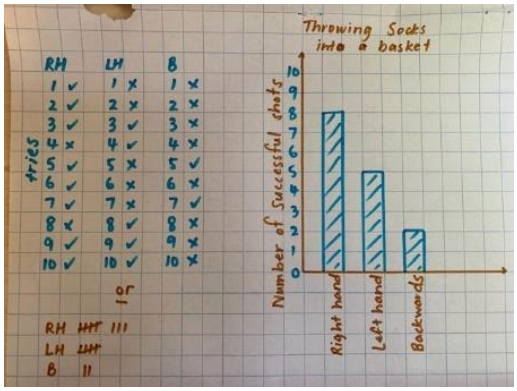
- You set up the activity with ample space (3 meters) and in a safe location
- Your child has a pencil to record how many tosses successfully get into the basket.

What my child needs to know and do

Watch the video Basketball toss.

What to do next

- Mark a clear ‘starting line’ for your basketball toss.
- Take 3 big steps from your starting line and place a basket, bucket or container at the end.
- Stand at your starting line and throw your socks with your right hand.
- Throw your socks, aiming for the basket, 10 times with your right hand.
- Then, do the same thing 10 times with your left hand.
- Repeat again. Try throwing backwards and with your eyes closed.
- Keep a record of your baskets and graph your results on a piece of paper.



Options for your child

Activity too hard?	Activity too easy?
Shorten the distance to throw	Lengthen the distance to throw

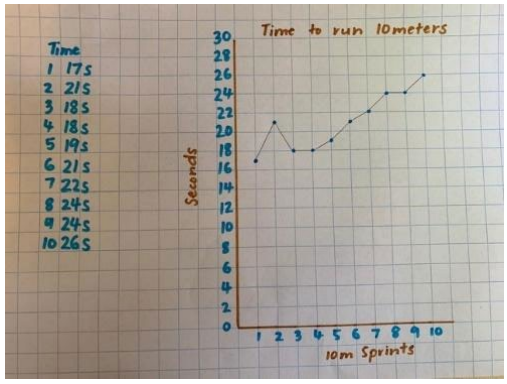
Follow-up questions to ask your child

- How many times did you get the ball/sock/toy in the basket throwing it right-handed, left-handed and backwards? Why do you think the scores were different?
- Why do we draw graphs to represent data?
- Where else do we see graphs being used? Eg weather report, surveys

Extension/Additional activity

Time yourself running a 10 meter distance (Take 10 big steps to approximate 10 meters). Record how many seconds it takes to run the 10 meters.

Do this 10 times and record each length of time it takes in seconds.
Draw a line graph to represent the length of time it took for each run.
Did your times slow down or fasten up as you finished your 10 sprints? Why?
How far did you run in total (if exactly 10m each time)?
Calculate how long it would take to run 100 meters, 500 meters and 1kilometer (1000m) in seconds
Convert these seconds to minutes and hours (60sec=1min, 60min=1hr).
Using Google maps, calculate how many kilometres it is from your house to either a friend's house, the corner shop, school, train station or your favourite take away.
How long would it take you to run there?



Week 2 - Package 5 - Year 5 & 6 Mathematics - Closest to 100

Things you need

Have these things available so your child can complete this task

Ideal	Back up
Playing cards from Ace to 9 (where Ace = 1)	UNO Cards
	4 sets of homemade cards with numbers 1-9

Why is this activity important?

Games provide a rich context for developing mathematical reasoning. They also provide a motivating context to practise using a range of appropriate strategies when solving addition and subtraction problems. It is important to build students' understandings of numbers to 100. Working in a group provides opportunities for students to talk about their strategies and give valid reasons for supporting one possible solution over another.

Before you start

- Setting up the activity with ample space to place cards in front of players
- Students are able to use a range of strategies to add and subtract up to 100

What your child needs to know and do

Watch the video Closest to 100.

What to do next

- Players shuffle the cards and put them in a central pile. One person takes 6 cards and places them face up for everyone to see.
- The goal is to use addition and subtraction to get as close to a total of 100 as possible.
- Each card can only be used once. It can be used to form a 1- or 2-digit number.
- Players score 0 points if they are able to reach exactly 100. Otherwise, they work out their points based on the difference between their total and 100. For example, if a team created a total of 98, they would score 2 points.
- Keep a cumulative total of their difference to 100. The winner is the team to have the lowest points score at the end.

Options for your child

Activity too hard?	Activity too easy?
Change the target number to a smaller number (for example, 30) Use more cards to find a solution Use a number chart to 100 to assist with counting Allow students to use a calculator to help them check their thinking.	Include multiplication and division in the challenge Change the target number to a bigger number than 100 (for example, try 137 or 956) Change the target number to a smaller number, for example, 35-hundredths (0.35). In this case, the numerals can be worth tenths or hundredths. Use fewer cards to find a solution, or, change the rules so you use all the cards.

Follow-up questions to ask your child

Do your solutions need to be under 100?

Can you win if your answer is above 100?

(Yes, as your solution may be 105 and therefore your score is 5. The other team may have a score of 90 and their score will be 10. The smallest difference wins.)

Can you use fewer cards to get to the target number? How did you do that?

Was there a more efficient way of getting to the target number?

Extension/Additional activity

Students draw their thought process in solving the problem.

Share methods of getting to the target number.