

# Measurement

Maths | Year 3 | Area Overview

## Introduction

In Y3 Measurement, lessons build upon learning from KS1 by developing ability to measure using an increasing range of measurement units. They refine their ability to measure length in centimetres, metres and millimetres, and apply this in a variety of contexts. They learn how to interpret a range of scales for measuring mass and capacity. Children learn to measure and calculate the perimeter of simple shapes using centimetres, and answer reasoning problems about perimeter. They use money in a range of practical contexts, adding and subtracting amounts and calculating change required. They use these skills in a range of problem-solving activities. Children extend their ability to tell the time on analogue and digital clocks and using clocks which have Roman numerals. They begin to use a.m. and p.m. and calculate and compare the duration of events.

## Resources

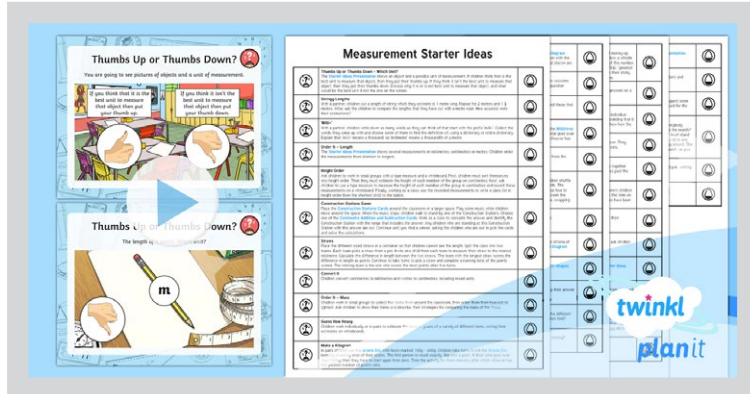
In addition to your standard maths resources, you will need: measuring equipment for measuring in metres (e.g. trundle wheels and tape measures), small teaching clocks, stop watches and timers.



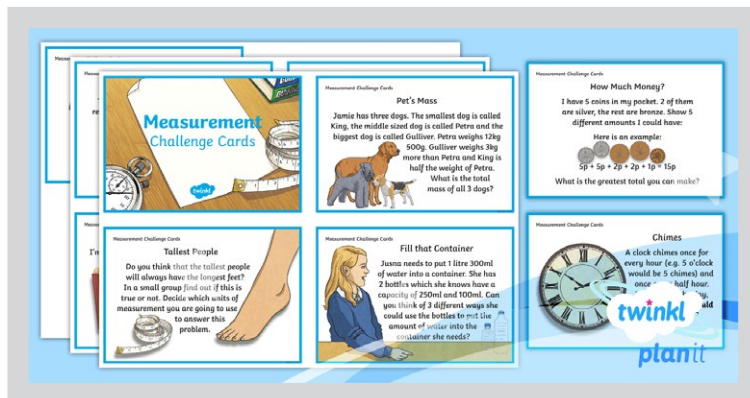
### Solvolt Lesson Pack:

#### Can you work out money combinations to a given total?

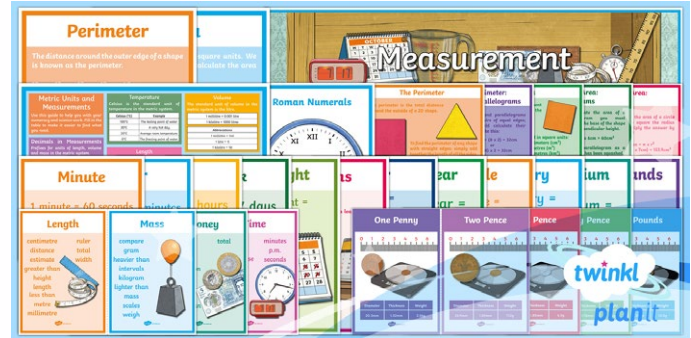
This Solvolt Lesson invites children to solve problems based on combining stamps of different values to total a given amount of money.



### Starter Ideas



### Challenge Cards



### Display Pack

## Assessment Statements

By the end of this unit...

...all children should be able to:

- estimate and measure in exact centimetres;
- estimate and measure in exact metres;
- estimate and measure in multiples of 10mm;
- measure and draw lines in centimetres and millimetres to the nearest 5mm;
- solve word problems by adding and subtracting two measurements in centimetres;
- solve addition problems involving metres by adding two three-digit numbers totalling up to 350m;
- solve subtraction problems involving metres by subtracting two three-digit numbers, not involving exchanging;
- solve addition and subtraction problems involving millimetres by adding three amounts;
- use  $<$ ,  $>$  and  $=$  to compare two single-unit length measurements;
- order single-unit length measurements.
- read scales to measure mass in intervals of 10g, 20g, 100g and 250g;
- add and subtract in kilograms (addition up to 250kg and subtraction not involving exchanging);
- read scales to measure capacity in intervals of 10ml and 25ml;
- measure the perimeter of rectangles and squares;
- calculate the perimeter of rectangles and squares (all side measurements given);

**...all children should be able to:**

- draw two different rectangles with the same perimeter;
- compare money amounts up to 50p;
- make different money combinations using coins up to 50p;
- choose the correct symbol  $<$ ,  $>$  or  $=$  to compare the money amounts;
- add together up to three items in pence where the total equals up to 50p;
- add together up to three items in pounds where the total equals up to £100;
- calculate the change required when paying for a single item and several items, paying with 50p;
- read the time in five-minute intervals on an analogue clock;
- read digital clocks in fifteen-minute intervals and state the time in analogue form;
- read clocks with Roman numerals in fifteen-minute intervals;
- identify whether events could be a.m. or p.m. or both;
- use vocabulary such as o'clock, a.m. and p.m., morning, afternoon, noon and midnight;
- state how many days there are in each month and how many days in a year and a leap year;
- calculate the number of days from one date to another up to 20 days;
- compare the times of events in minutes and seconds;
- calculate and compare the length of events using digital times in fifteen-minute intervals;

**...most children will be able to:**

- estimate and measure to the nearest centimetre;
- estimate and measure to the nearest metre;
- estimate and measure in multiples of five millimetres;
- measure and draw lines in mixed units (centimetres and millimetres);
- solve word problems by adding and subtracting three measurements in centimetres;
- solve addition problems involving metres by adding two three-digit numbers totalling up to 550m;
- solve subtraction problems involving metres by subtracting two three-digit numbers involving exchanging;
- solve addition and subtraction problems involving millimetres by adding four amounts;
- use  $<$ ,  $>$  and  $=$  to compare two mixed-unit length measurements;
- order mixed-unit length measurements;
- children read scales to measure mass in intervals of 25g and 200g;

- add and subtract in kilograms (addition up to 1000kg and subtraction not involving exchanging);
- read scales to measure capacity in intervals of 20ml;
- calculate the perimeter of squares (side measurements given);
- compare money amounts up to £1;
- make different money combinations using coins up to £1;
- add together up to three items in pence where the total equals up to £1;
- add together up to three items in pounds where the total equals up to £150;
- calculate the change required when paying for a single and several items, paying with £1;
- read the time in minute intervals on an analogue clock;
- read digital clocks in five-minute intervals and state the time in analogue form;
- read clocks with Roman numerals in five-minute intervals;
- order times that use a.m. and p.m.;
- calculate the number of days from one date to another (up to 50 days);
- calculate and compare the length of events using digital times in ten-minute intervals;

**...some children will be able to:**

- estimate and measure in whole and half centimetres;
- estimate and measure in whole and half metres;
- estimate and measure in multiples of one millimetre;
- order sets of mixed measurements;
- solve length problems involving calculating a missing number;
- draw their own scale to mark given masses;
- add in kilograms, adding totals over 1000kg;
- mark cylinders to given capacity measures;
- compare money amounts up to £1.50;
- make different money combinations using coins up to £1.50;
- work out missing money amounts where the total and one amount is given;
- add together up to three items in pounds where the total equals up to £250;
- calculate the change required when paying for a single item and several items, paying with £2;
- read clocks with Roman numerals - minute intervals;
- write a definition for time vocabulary such as: o'clock, a.m. and p.m., morning, afternoon, noon and midnight;

**...some children will be able to:**

- calculate the number of days from one date to another (over 100 days);
- calculate and compare the length of events using digital times in five-minute intervals.

## Lesson Breakdown

Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml).

### Length (1): Measuring in Centimetres

I can estimate and measure length in centimetres.

### Length (2): Measuring in Metres

I can estimate and measure length in metres.

### Length (3): Measuring in Millimetres

I can estimate and measure length in millimetres.

### Length (4): Mixed Units

I can use mixed units to measure and record length.

### Length (5): Alien Antics

I can solve addition and subtraction problems involving centimetres.

### Length (6): London Buildings

I can solve addition and subtraction problems involving metres.

### Length (7): British Coins

I can solve addition and subtraction problems involving millimetres.

### Length (8): Comparing Lengths

I can compare length measurements in m, cm and mm.

### Mass (1): Measuring Grams

I can measure mass in grams.

### Mass (2): The Bake Off

I can measure mass in grams.

### Mass (3): Measuring Kilograms and Grams

I can measure mass in kilograms and grams.

### Mass (4): Animals

I can solve addition and subtraction problems involving kilograms.

### Mass (5): Comparing Fruit

I can calculate the total combined mass and difference of several items.

### Volume and Capacity (1): Measuring in Millilitres

I can measure capacity in millilitres.

### Volume and Capacity (2): Measuring in Litres and Millilitres

I can measure capacity in litres and millilitres.

### Volume and Capacity (3): Jazzy Juice

I can measure capacity in litres and millilitres.

### **Volume and Capacity (4): The Trolls**

I can solve addition and subtraction problems involving millilitres.

### **Volume and Capacity (5): Magic Potions**

I can solve word problems involving capacity.

### **Home Learning: Average Heights**

Differentiated activities where children interpret and compare average height charts for children of different ages.

## Measure the perimeter of simple 2D shapes.

### **Perimeter (1): Measuring Perimeter**

I can calculate the perimeter of a shape in centimetres.

### **Perimeter (2): Perimeter Problems**

I can solve problems involving perimeter.

### **Home Learning: Perimeter**

Differentiated activities where children calculate the perimeter of rectangles and squares, draw rectangles to a given perimeter and solve a simple problem involving perimeter.

## Add and subtract amounts of money to give change, using both £ and p in practical contexts.

### **Money (1): Money Combinations**

I can find and compare different combinations of coins.

### **Money (2): The Sweet Shop**

I can add amounts of money.

### **Money (3): The Toy Shop**

I can compare the value of groups of items.

### **Money (4): The Tuck Shop**

I can calculate the change needed when buying one or more items.

### **Money (5): The Snack Bar**

I can solve addition and subtraction problems involving money.

### **Home Learning: Giving Change**

In this differentiated activity, children calculate the amount of change given when buying items from 50p, £1 and £2.

## Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks.

### **Telling the Time (1): Telling the Time in Five-Minute Intervals**

I can tell and write the time in 5 minute intervals.

### **Telling the Time (2): Minutes Past the Hour**

I can tell and write the time in minutes past the hour.

### **Telling the Time (3): Minutes to the Hour**

I can tell and write the time in minutes to the hour.

### **Telling the Time (4): Digital Times – Fifteen-Minute intervals**

I can tell the time in 15 minute intervals using a digital clock.

### **Telling the Time (5): Digital Times – Five-Minute Intervals**

I can tell the time in 5 minute intervals using a digital clock.

### **Telling the Time (6): The 24-Hour Clock**

I can convert 12-hour times into 24-hour times and vice versa.

### **Telling the Time (7): Roman Numerals**

I can tell the time using a clock with Roman numerals.

### **Home Learning: A Diary of My Day**

Differentiated activities where children record the time in words and on a clock face, accompanied by the activities of their day.

Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, am/pm, morning, afternoon, noon and midnight.

### **Estimate and Read Time: Reading Time to the Nearest Minute**

I can estimate and read time to the nearest minute.

### **Estimate, Time and Compare (1): Seconds**

I can estimate, time and compare activities in seconds.

### **Estimate, Time and Compare (2): Minutes and Seconds**

I can estimate, time and compare activities in minutes and seconds.

### **Estimate, Time and Compare (3): Hours and Minutes**

I can compare times in hours and minutes.

### **Time Vocabulary (1): Minutes and Seconds**

I can estimate, time and compare activities in minutes and seconds.

### **Time Vocabulary (2): Using A.M. and P.M.**

I can use a.m. and p.m. to say whether things happen before or after noon.

### **Home Learning: A.M. and P.M.**

In these differentiated activity sheets, children solve problems based on a chart showing things done on an ideal day, calculating durations and times from given information.

Know the number of seconds in a minute and the number of days in each month, year and leap year.

### **Time Units (1): Minutes and Seconds**

I can convert between seconds and minutes.

### **Time Units (2): All in a Year**

I can say how many days there are in months, a year and leap year.

### **Home Learning: The Calendar**

Differentiated activities where children interpret and answer questions about months on a calendar.

Compare durations of events [for example, to calculate the time taken by particular events or tasks].

### **Comparing Timed Events (1): A Day Out**

I can calculate the duration of events.

### **Comparing Timed Events (2): Time Events Problems**

I can solve problems about the duration of events.

## Home Learning: Train Times

In this differentiated activity, children calculate and compare the duration of train journeys.



# Giving Change

Here is a price list for ice creams and lollies:

Cool Creamy Cone	25p
Juicy Juice Ice Lolly	48p
Bubble Pot	52p
Strawberry Surprise	29p
Minty Supreme	36p
Tangy Tangerine	61p

You buy the following items and pay with £2. How much change will you receive?  
Show your working out.

1) Cool Creamy Cone

Change \_\_\_\_\_

2) 2 Minty Supremes

Change \_\_\_\_\_

3) 3 Bubble Pots

Change \_\_\_\_\_

4) 3 Juicy Juice Ice Lollies

Change \_\_\_\_\_





Cool Creamy Cone	25p
Juicy Juice Ice Lolly	48p
Bubble Pot	52p
Strawberry Surprise	29p
Minty Supreme	36p
Tangy Tangerine	61p

5) 2 Bubble Pots and a Cool Creamy Cone

Change \_\_\_\_\_

6) A Tangy Tangerine, a Cool Creamy Cone and a Strawberry Surprise

Change \_\_\_\_\_







# Giving Change Answers

Question	Answer
	You buy the following items and pay with £2. How much change will you receive? Show your working out.
1.	Cool Creamy Cone - Change <b>£1.75</b>
2.	2 Minty Supremes - Change <b>£1.28</b>
3.	3 Bubble Pots - Change <b>44p</b>
4.	3 Juicy Juice Ice Lollies - Change <b>56p</b>
5.	2 Bubble Pots and a Cool Creamy Cone - Change <b>71p</b>
6.	A Tangy Tangerine, a Cool Creamy Cone and a Strawberry Surprise - Change <b>85p</b>



# Giving Change

Here is a price list for ice creams and lollies:

Cool Creamy Cone	25p
Juicy Juice Ice Lolly	18p
Bubble Pot	22p
Strawberry Surprise	29p
Minty Supreme	36p
Tangy Tangerine	31p

You buy the following items and pay with 50p. How much change will you receive?  
Show your working out.

1) Cool Creamy Cone

Change \_\_\_\_\_

2) Minty Supreme

Change \_\_\_\_\_

3) Bubble Pot

Change \_\_\_\_\_

4) Juicy Juice Ice Lolly

Change \_\_\_\_\_



Cool Creamy Cone	25p
Juicy Juice Ice Lolly	18p
Bubble Pot	22p
Strawberry Surprise	29p
Minty Supreme	36p
Tangy Tangerine	31p

5) 2 Bubble Pots

Change \_\_\_\_\_

6) A Juicy Juice Ice Lolly and a Strawberry Surprise

Change \_\_\_\_\_





# Giving Change Answers

Question	Answer
	You buy the following items and pay with 50p. How much change will you receive? Show your working out.
1.	Cool Creamy Cone - Change <b>25p</b>
2.	Minty Supreme - Change <b>14p</b>
3.	Bubble Pot - Change <b>28p</b>
4.	Juicy Juice Ice Lolly - Change <b>32p</b>
5.	2 Bubble Pots - Change <b>6p</b>
6.	A Juicy Juice Ice Lolly and a Strawberry Surprise - Change <b>3p</b>



# Giving Change

Here is a price list for ice creams and lollies:

Cool Creamy Cone	25p
Juicy Juice Ice Lolly	48p
Bubble Pot	52p
Strawberry Surprise	29p
Minty Supreme	36p
Tangy Tangerine	61p

You buy the following items and pay with £1. How much change will you receive?  
Show your working out.

1) Cool Creamy Cone

Change \_\_\_\_\_

2) Minty Supreme

Change \_\_\_\_\_

3) Bubble Pot

Change \_\_\_\_\_

4) Juicy Juice Ice Lolly

Change \_\_\_\_\_



Cool Creamy Cone	25p
Juicy Juice Ice Lolly	48p
Bubble Pot	52p
Strawberry Surprise	29p
Minty Supreme	36p
Tangy Tangerine	61p

5) 2 Juicy Juice Ice Lollies

Change \_\_\_\_\_

6) A Tangy Tangerine and a Strawberry Surprise

Change \_\_\_\_\_





# Giving Change Answers

Question	Answer
	You buy the following items and pay with £1. How much change will you receive? Show your working out.
1.	Cool Creamy Cone - Change <b>75p</b>
2.	Minty Supreme - Change <b>64p</b>
3.	Bubble Pot - Change <b>48p</b>
4.	Juicy Juice Ice Lolly - Change <b>52p</b>
5.	2 Juicy Juice Ice Lollies - Change <b>4p</b>
6.	A Tangy Tangerine and a Strawberry Surprise - Change <b>10p</b>