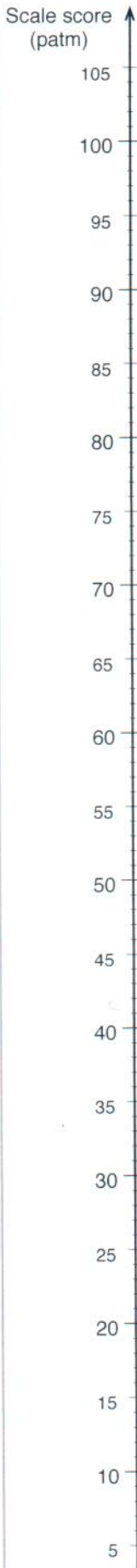


Figure 1 The PAT:Mathematics scale, with sample descriptors



Students can typically use the mathematical knowledge and skills described at and below the level of their scale score.

Understand the effect of adding and subtracting negative numbers. Estimate the result of finding a non-unit fraction of a whole, for example: estimate $\frac{3}{19}$ of 60. Identify an algebraic expression that describes a relationship in a spatial or number pattern. Identify a distance time graph that matches a described journey. Use knowledge of shapes and angle properties to identify the size of missing angles. Recognise the fractional scale factor needed for a reduction. Use graphs and tables involving more than one variable, for example: read a stacked bar graph.

Understand and order a list of decimal numbers involving tenths, hundredths and thousandths, for example: order 5.6, 5.22, 5.315, 5.08. Solve percentage problems involving multiples of 5 percent, for example: discount an amount by 10% and find 15% of a whole. Solve a simple algebraic equation, for example: $3x + 6 = 21$. Identify an accurate definition of volume. Work with grouped data in a histogram or frequency table. Identify appropriate techniques to obtain fair samples.

Convert between fractions and decimals involving tenths. With the help of diagrams identify equivalent fractions. Solve addition and subtraction problems involving three and four digit numbers. Use addition and subtraction to identify the next number in a sequence, for example: 940, 820, 700, 580 Identify the image produced when a simple shape is reflected in a mirror line. Use a simple understanding of the mean, for example: Identify the effect on the mean of adding or removing high or low value data points.

Identify the position of decimals involving tenths on the number line. Use fraction notation to name fractions shown in diagrams. Solve simple multiplication and division problems involving known multiplication facts, for example: $35 \sqrt{7}$. Use doubling to continue a sequence of numbers. Read a point halfway between labelled marks on a scale. Read and compare times shown on analogue and digital clocks. Identify which pie graph matches a given bar chart. Use expressions such as good chance, even chance, bad chance and no chance to describe simple probabilities.

Construct numbers involving 1000s, 100s 10s and 1s. Identify the number of 10s in a three-digit number, for example: there are 63 tens in 634. Complete addition problems where knowledge of part-whole strategies lead to more efficient methods, for example: $27 + 25$. Find the next number in a pattern where simple counting strategies are efficient. Name 2-D and 3-D shapes, for example: recognise cylinders and hexagons. Use compass points to determine direction. Recognise equally likely events.

Identify half of a small group of objects. Construct two-digit numbers using groups of 10s and 1s. Complete simple additions and subtractions where counting-on strategies are efficient, for example: $12 + 5 + 11$. Identify a fold that can be used to divide a simple shape into two matching parts. Identify instances of simple 2-D shapes. Recognise what number a bar represents on a bar chart. Read a simple tally chart.