

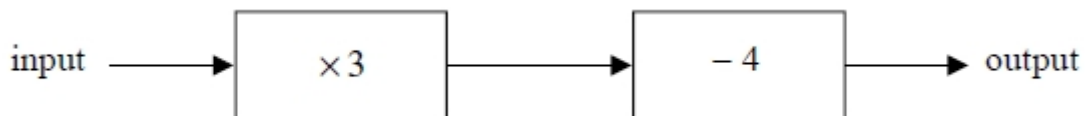
Foundation tier unit 5a-1 check in test

Non-calculator

Q1. Which of these is a formula?

$$A = \frac{1}{2}(a + b)h \quad \frac{1}{2}(a + b)h \quad \frac{1}{2}(a + b)h = 210 \quad \frac{1}{2}(a + b)h \equiv \frac{1}{2}ah + \frac{1}{2}bh$$

Q2. Here is a number machine.

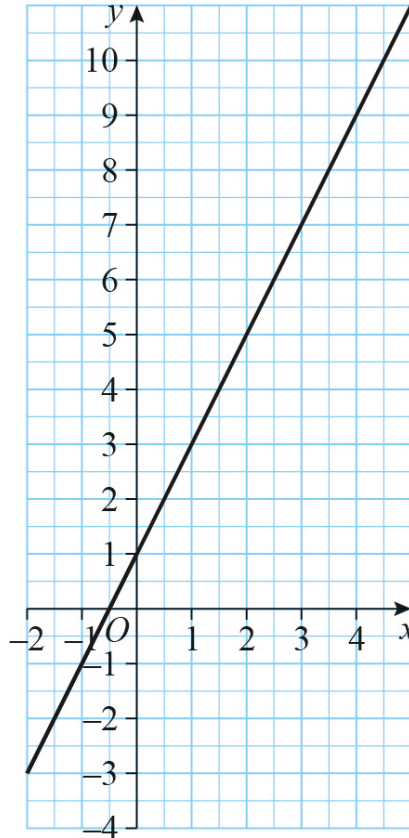


Work out the input when the output is 11

Q3. The formula $F = 1.8C + 32$ can be used to convert between temperatures in degrees Celsius (C) and temperatures in degrees Fahrenheit (F).
Change 28° Celsius into degrees Fahrenheit.

Q4. Solve $\frac{t}{7} = 5$

Q5. The graph shows the equation $y = 2x + 1$.



Use the graph to solve the equation $2x + 1 = 6.5$

Q6. Amy has two older brothers.
Ben is 3 years older than Amy.
Chris is 10 years older than Ben.
The total of their ages is 73.

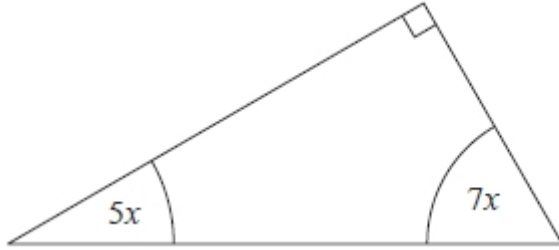
Form an equation and use it to work out Amy's age.

Q7. Solve $4x + 5 = x + 26$

Q8. Make h the subject of the formula $x = 5h + 8$

Q9. Solve $5x - 11 = 3(x - 9)$

Q10. The diagram shows a right-angled triangle.



**Diagram NOT
accurately drawn**

All the angles are in degrees.
Work out the size of the smallest angle.

Topics listed in objectives

- Select an expression/equation/formula/identity from a list;
- Write expressions and set up simple equations including forming an equation from a word problem;
- Use function machines;
- Solve simple equations including those:
 - with integer coefficients, in which the unknown appears on either side or on both sides of the equation;
 - which contain brackets, including those that have negative signs occurring anywhere in the equation, and those with a negative solution;
 - with one unknown, with integer or fractional coefficients;
- Rearrange simple equations;
- Substitute into a formula, and solve the resulting equation;
- Find an approximate solution to a linear equation using a graph;
- Solve angle or perimeter problems using algebra.

Answers

Q1. $A = \frac{1}{2}(a + b)h$

Q2. 5

Q3. 82.4 °F

Q4. $t = 35$

Q5. $x = 2.75$

Q6. Amy is 19

Q7. $x = 7$

Q8. $h = \frac{x}{5} \cdot 8$

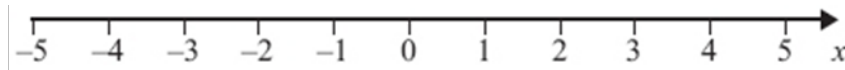
Q9. $x = -8$

Q10. 37.5°

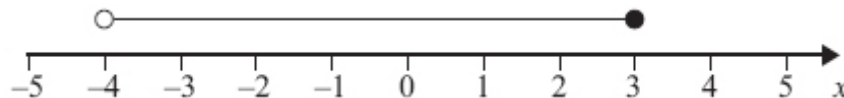
Foundation tier unit 5a-2 check in test

Non-calculator

Q1. On the number line below, show $x \leq 4$



Q2. Write down the inequality shown in the diagram.



Q3. n is an integer.

$$-1 \leq n < 4$$

List the possible values of n .

Q4. Work out the smallest integer value of x that satisfies the inequality $4x - 3 \geq 22$.

Q5. Solve $3(a + 7) \geq 6$

Q6. Solve $3y - 2 > 5$

Q7. Find the integer value of x that satisfies both the inequalities

$$x + 5 > 8 \quad \text{and} \quad 2x - 3 < 7$$

Q8. Solve $-3 < 2x + 1 < 7$

Q9. Solve $5x + 4 \leq 33.5$

Round your answer to the nearest whole number.

Q10. The length, d , of a desk is given as 135cm to the nearest whole centimetre.

Which inequality represents the possible length of the desk?

$$134 < d \leq 136 \quad 134 \leq d < 135.5 \quad 134.5 \leq d < 135.5 \quad 134.5 < d \leq 135.5$$

Topics listed in objectives

- Show inequalities on number lines;
- Write down whole number values that satisfy an inequality;
- Solve an inequality such as $-3 < 2x + 1 < 7$ and show the solution set on a number line;
- Solve two inequalities in x , find the solution sets and compare them to see which value of x satisfies both;
- Use the correct notation to show inclusive and exclusive inequalities;
- Construct inequalities to represent a set shown on a number line;
- Solve simple linear inequalities in one variable, and represent the solution set on a number line;
- Round answers to a given degree of accuracy;
- Use inequality notation to specify simple error intervals due to truncation or rounding.

Answers

Q1. black circle at 4 and line to left

Q2. $-4 < x \leq 3$

Q3. $-1, 0, 1, 2, 3$

Q4. 7

Q5. $a \geq -5$

Q6. $y > \frac{7}{3}$

Q7. $x = 4$

Q8. $-2 < x < 3$

Q9. $x \leq 6$

Q10. $134.5 \leq d < 135.5$

Foundation tier unit 5b check in test

Non-calculator

Q1. Choose the best word to describe this sequence.

1 2 3 5 8 13

- A Sequence of odd numbers
- B Sequence of even numbers
- C Fibonacci sequence
- D Square numbers

Q2. Here are the first five terms of an arithmetic sequence.

14 11 8 5 2

Find the next two terms.

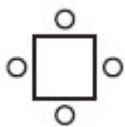
Q3. Here are the first four terms of a number sequence.

3 7 11 15

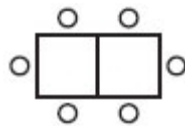
The 50th term of this number sequence is 199
Write down the 51st term of this sequence.

Q4. The n th term of a sequence is $7n - 11$.
Find the 50th term.

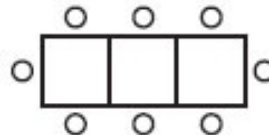
Q5. Here are the first four patterns in a sequence.
Each pattern is made from squares and circles.



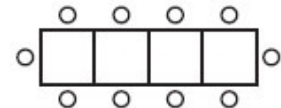
Pattern number 1



Pattern number 2



Pattern number 3



Pattern number 4

Find an expression, in terms of n , for the number of circles in pattern number n .

Q6. Here are the first three terms of a sequence.

32 26 20

Find the first two terms in the sequence that are less than zero.

Q7. Here are the first four terms of a number sequence.

3 9 15 21

Find the n th term for the sequence.

Use it to decide which of these numbers is a term in the sequence.

47 57 67 77

Q8. The n th term of a quadratic sequence is $3n^2 - 10$
Work out the 5th term of this sequence.

Q9. Here are the first six terms of a geometric sequence.

1 -2 4 -8 16 -32

Find the term-to-term rule.

Q10. Which of these is a geometric sequence?

- A 81, 27, 9, 3, $\frac{1}{3}$
- B 81, 63, 45, 27, 9
- C 81, 64, 49, 36, 25
- D 81, 31, -19, -69, -119

Topics listed in objectives

- Recognise sequences of odd and even numbers, and other sequences including Fibonacci sequences;
- Use function machines to find terms of a sequence;
- Write the term-to-term definition of a sequence in words;
- Find a specific term in the sequence using position-to-term or term-to-term rules;
- Generate arithmetic sequences of numbers, triangular number, square and cube integers and sequences derived from diagrams;
- Recognise such sequences from diagrams and draw the next term in a pattern sequence;
- Find the next term in a sequence, including negative values;
- Find the n th term
 - for a pattern sequence;
 - a linear sequence;
 - of an arithmetic sequence;
- Use the n th term of an arithmetic sequence to
 - generate terms;
 - decide if a given number is a term in the sequence, or find the first term over a certain number;
 - find the first term greater/less than a certain number;
- Continue a geometric progression and find the term-to-term rule, including negatives, fraction and decimal terms;
- Continue a quadratic sequence and use the n th term to generate terms;
- Distinguish between arithmetic and geometric sequences.

Answers

- Q1. C
Q2. $-1, -4$
Q3. 203
Q4. 339
Q5. $2n + 2$
Q6. -4 and -10
Q7. 67
Q8. 65
Q9. $\times -2$
Q10. A