# Checkpoint Task: Equations

# Starter Activity: How many ways can you rewrite this equation?

Work with your partner to find different ways of writing this equation.

7*x* + 5 = 23

# Activity 2: Using Number Pyramids

**Remember, the numbers in the bricks are found by adding the 2 bricks immediately below together.**

1. Complete this number pyramid.

5

11

3

7

1. Place the numbers 1 to 5 in the bottom row of the pyramid in any order.

What is the largest possible number that can be made in the top brick? Explain why.

1. Complete these 2 pyramids.

2*x*

7

*x* + 3

*x*

5

3

1. Complete these pyramids. For each one, form an equation and solve it to find *x*.

Here is an example.

20

2*x* + 3

9

2*x*

3

6

20

2*x*

3

6

So 2*x* + 3 + 9 = 20

2*x* + 12 = 20 and now you can solve the equation to find the value of *x*, in this case *x* = 4.

Now try these.

25

*x*

6

5

12

3

*p*

5

30

5

*y*

3

7

1. For each of these pyramids, form an equation and solve it to find *x*.

*x* + 25

3*x*

8

3

2*x* + 2

*x*

1

5

4*x* + 30

5

*2x*

7

5

3*x* – 3

*x*

4

3

6

1. Now try to create some pyramids of your own and solve the equations yourself or give them to your partner to solve.

# Activity 3: Generalising Equations

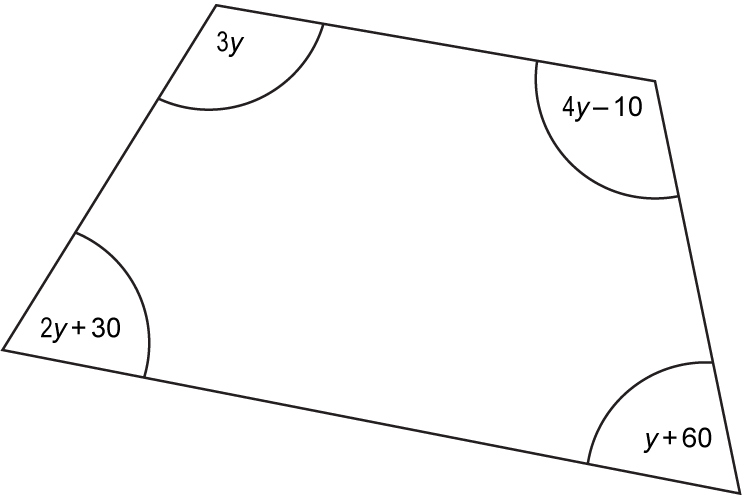
**A: Solving simple equations**

Solve the equations showing all steps clearly.

1. 3*x* + 7 = 13
2. 5*x* – 4 = 11
3. 2*x* + 5 = 3
4. 6*x* – 2 = 1
5. 7*x* + 5 = 3

*Do you need some more examples to work on?*

**Extension task 1**



Use the diagram to form an equation and then find the size of each angle of the quadrilateral.

**B: Solving equations with the unknown on both sides**

How do we solve the following equation?

5*x* + 3 = 2*x* + 18

Show your steps clearly.

What happens if we change the numerical values of this equation? Can we still solve it?

Try these 3 examples.

1. 7*x* + 5 = 9*x* – 5
2. 4*x* – 4 = 3*x* – 3
3. 5*x* + 0.6 = 3*x* + 1

*Do you need some more examples to work on?*

Write 3 equations with the unknown on both sides for your partner to solve. Make use of negatives and decimals if you would like to increase the difficulty.

**Extension task 2**

The diagram shows a rectangle. All of the sides are measured in centimetres.



1. Explain why 4*x* + 17 = 7*x* + 5.
2. Solve the equation 4*x* + 17 = 7*x* + 5.
3. Calculate the perimeter of the rectangle.

**C: Generalising**

We can write a general solution for **all** equations of this form using just letter terms.

For example, the most simple equation can be generalised here.

*x* + *a* = *b*

*x* = *b* – *a*

Can you use your working to deduce a general solution for these equations?

1. *x* – *a* = *b*
2. *ax* = *b*
3. 
4. *ax* – *b* = *c*
5. *ax* + *b* = *cx* + *d*

Show all steps in your working. Can you explain your working to your partner and justify each step?

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