Express Missing Number Problems Algebraically

For each question, circle any expression that expresses the problems algebraically and then solve the problem.

Example:

Twelve more than a number is 34. What is the number?

(n+12=34) (12+n=34) 12-34=n n= 22

1. Ten less than a number is 26. What is the number?

n-10=26 10-n=26 n=26-10 n= _____

2. 16 is added to a number to make 35. What is the number?

35+16=n n+16=35 35=16+n n= _____

3. Fifteen is subtracted from a number to make 26. What is the number?

26-n=15 15-n=26 n-15=26 n= _____

4. Seventeen more than a number is 43. What is the number?

17+n=43 17+43=n n+17=43 n= _____

5. A number has thirteen added to it to make 42. What is the number?

13+n=42 42=n+13 n=13+42 n= _____

6. What number has 24 added to it to make 51?

n-24=51 24+n=51 n+24=51 n= _____

7. What number has nineteen subtracted from it to make twenty-five?

n-19=25 25-n=19 n-25=19 n= _____

8. 56 is the total of a number and twenty-seven. What is the number?

n+56=27 27+56=n 27+n=56 n= _____

Express Missing Number Problems Algebraically

For each question, express the problem algebraically and then complete the table.

1. Classroom tray units are built at different heights. The height of the tray unit without legs is written as h. The trays have legs of 6cm added.

   What formula is used to express the height of a set of trays with legs? _____

   Complete the table below using the formula.

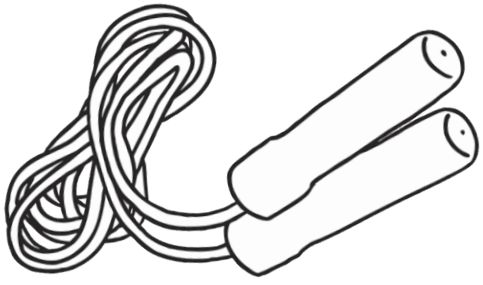
Height of tray unit without legs	Height of tray unit with legs
26cm	
34cm	
	58cm
65cm	
	95cm

2. Skipping ropes are made from lengths of rope. The length of the rope used is r. 14 cm of rope is used at the ends for the handles so the skipping rope is 14cm less than the length of rope used.

   What formula is used to express how long is the skipping rope? _____

   Complete the table below using the formula.

Length of rope used	Length of finished skipping rope
80cm	
92cm	
	86cm
105cm	
	92cm



Express Missing Number Problems Algebraically

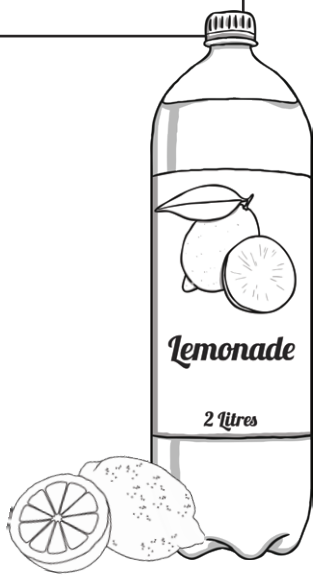
For each question, express the problem algebraically and then complete the table.

1. A jar weighs 58g. It is filled with different weights of jam. The weight of jam is j.
   What formula is used to express the weight of a jar of jam? _____
   Complete the table below using the formula.

Weight of jam used	Weight of jar with jam
120g	
145g	
	238g
215g	
	306g

2. When lemonade is poured into a bottle, 15 ml is spilled. The amount of lemonade poured is d.
   What formula is used to express the amount of lemonade in a bottle? _____
   Complete the table below using the formula.

Lemonade poured	Lemonade in a bottle
240ml	
345ml	
	450ml
515ml	
	750ml



Express Missing Number Problems Algebraically Answers

For each question, circle any expression that expresses the problems algebraically and then solve the problem.

Example:

Twelve more than a number is 34. What is the number?

n+12=34 | 12+n=34 | 12-34=n | n= 22

1. Ten less than a number is 26. What is the number?

(n-10=26) | 10-n=26 | n=26-10 | n= 36

2. 16 is added to a number to make 35. What is the number

35+16=n | (n+16=35) | (35=16+n) | n= 19

3. Fifteen is subtracted from a number to make 26. What is the number?

26-n=15 | 15-n=26 | (n-15=26) | n= 41

4. Seventeen more than a number is 43. What is the number?

(17+n=43) | 17+43=n | (n+17=43) | n= 26

5. A number has thirteen added to it to make 42. What is the number?

(13+n=42) | (42=n+13) | n=13+42 | n= 29

6. What number has 24 added to it to make 51?

n-24=51 | (24+n=51) | (n+24=51) | n= 27

7. What number has nineteen subtracted from it to make twenty-five?

(n-19=25) | 25-n=19 | (n-25=19) | n= 44

8. 56 is the total of a number and twenty-seven. What is the number?

n+56=27 | 27+56=n | (27+n=56) | n= 29

Express Missing Number Problems Algebraically Answers

For each question, express the problem algebraically and then complete the table.

1. Classroom tray units are built at different heights. The height of the tray unit without legs is written as h. The trays have legs of 6cm added.

   What formula is used to express the height of a set of trays with legs? **height=h+6**

   Complete the table below using the formula.

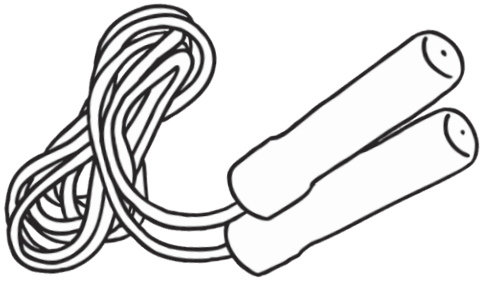
Height of tray unit without legs	Height of tray unit with legs
26cm	32cm
34cm	40cm
52cm	58cm
65cm	71cm
89cm	95cm

2. Skipping ropes are made from lengths of rope. The length of the rope used is r. 14 cm of rope is used at the ends for the handles so the skipping rope is 14cm less than the length of rope used.

   What formula is used to express how long is the skipping rope? **skipping rope=r-14**

   Complete the table below using the formula.

Length of rope used	Length of finished skipping rope
80cm	66cm
92cm	78cm
100cm	86cm
105cm	91cm
106cm	92cm



Express Missing Number Problems Algebraically Answers

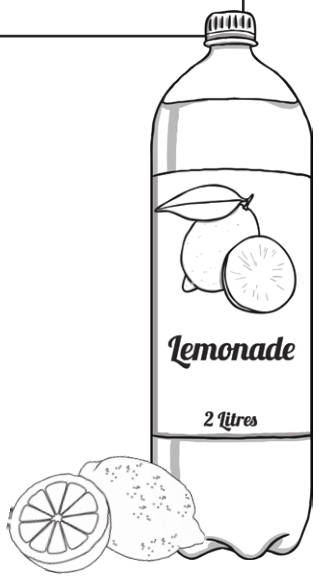
For each question, express the problem algebraically and then complete the table.

1. A jar weighs 58g. It is filled with different weights of jam. The weight of jam is j.
   What formula is used to express the weight of a jar of jam? **weight of jar of jam=j+58**
   Complete the table below using the formula.

Weight of jam used	Weight of jar with jam
120g	178g
145g	203g
180g	238g
215g	273g
248g	306g

2. When lemonade is poured into a bottle, 15 ml is spilled. The amount of lemonade poured is d.
   What formula is used to express the amount of lemonade in a bottle? **lemonade=d-15**
   Complete the table below using the formula.

Lemonade poured	Lemonade in a bottle
240ml	225ml
345ml	330ml
465ml	450ml
515ml	500ml
765ml	750ml



Express Missing Number Problems Algebraically

For each question, express the problems algebraically and then solve the problem.

Example:

Twelve more than a number is 34. What is the number?

$n+12=34$ $n= 22$

Note: With addition, answers can be either way round: $n+16=35$, $16+n=35$; but not subtraction.

1. Ten less than a number is 26. What is the number?

   _____ n= _____

2. 16 is added to a number to make 35. What is the number?

   _____ n= _____

3. Fifteen is subtracted from a number to make 26. What is the number?

   _____ n= _____

4. Seventeen more than a number is 43. What is the number?

   _____ n= _____

5. A number has thirteen added to it to make 42. What is the number?

   _____ n= _____

6. What number has 24 added to it to make 51?

   _____ n= _____

7. What number has nineteen subtracted from it to make twenty-five?

   _____ n= _____

8. 56 is the total of a number and twenty-seven. What is the number?

   _____ n= _____

Challenge

Write some of your own questions for others to work out.

Express Missing Number Problems Algebraically

1. A tiler calculates the cost of tiles using the following costs. The tiles are £6 per square metre and £8 delivery. The area is a.

   What formula is used to express this calculation?

   Calculate the cost of tiles covering $7m^2$

   The builder spends £98 on tiles. What area will the tiles cover?

2. A plumber charges £ 12 per hour and £ 15 for a call-out. The number of hours is h.

   What formula is used to express this calculation?

   Calculate the cost of 3 hours work.

   The plumber charges £99 for a job. How many hours were worked?

3. A decorator charges £15 per hour but offers a £9 discount if his bill is paid immediately.

   What formula is used to express this calculation?

   Calculate the cost of 9 hours work.

   The decorator charges £ 96 for a job. How many hours were worked?

4. A wholesaler charges £7 for each box of apples and £6 for delivery. The number of boxes is b.

   What formula is used to express this calculation?

   Calculate the cost of buying 16 boxes of apples.

   The grocer spends £ 17 4 on apples. How many boxes will he have?

5. A gardener has a special offer, charging £ 11 per hour, but offering a £7 discount during July.

   The number of hours is h.

   What formula is used to express this calculation?

   Calculate the cost of 6 hours work.

   The gardener charges £8 1 for a job. How many hours were worked?

Challenge

Write some of your own questions for someone else to solve.

Try these equations and then some of your own: 3h+8, 12a-6 and 9b+15

Express Missing Number Problems Algebraically Answers

For each question, express the problems algebraically and then solve the problem.

Example:

Twelve more than a number is 34. What is the number?

n+12=34 n= 22

Note: With addition, answers can be either way round: n+16=35, 16+n=35; but not subtraction.

1. Ten less than a number is 26. What is the number?

   n-10=26 n= 36

2. 16 is added to a number to make 35. What is the number?

   n+16=35 n= 19

3. Fifteen is subtracted from a number to make 26. What is the number?

   n-15=26 n= 41

4. Seventeen more than a number is 43. What is the number?

   n+17=43 n= 26

5. A number has thirteen added to it to make 42. What is the number?

   n=13+42 n= 29

6. What number has 24 added to it to make 51?

   n+24=51 n= 27

7. What number has nineteen subtracted from it to make twenty-five?

   n-19=25 n= 44

8. 56 is the total of a number and twenty-seven. What is the number?

   27+n=56 n= 29

Challenge

Write some of your own questions for others to work out.

Express Missing Number Problems Algebraically Answers

1. A tiler calculates the cost of tiles using the following costs. The tiles are £6 per square metre and £8 delivery. The area is a.

   What formula is used to express this calculation? cost= 6a+8

   Calculate the cost of tiles covering $7m^2$ £50

   The builder spends £98 on tiles. What area will the tiles cover? $15m^2$

2. A plumber charges £ 12 per hour and £ 15 for a call-out. The number of hours is h.

   What formula is used to express this calculation? cost= 12h+15

   Calculate the cost of 3 hours work. £51

   The plumber charges £99 for a job. How many hours were worked? 7 hours

3. A decorator charges £15 per hour but offers a £9 discount if his bill is paid immediately.

   What formula is used to express this calculation? cost= 15h-9

   Calculate the cost of 9 hours work. £126

   The decorator charges £ 96 for a job. How many hours were worked? 7 hours

4. A wholesaler charges £7 for each box of apples and £6 for delivery. The number of boxes is b.

   What formula is used to express this calculation?

   Calculate the cost of buying 16 boxes of apples. cost=7b+6

   The grocer spends £ 17 4 on apples. How many boxes will he have? £118

   24 boxes

5. A gardener has a special offer, charging £ 11 per hour, but offering a £7 discount during July.

   The number of hours is h.

   What formula is used to express this calculation?

   Calculate the cost of 6 hours work. cost=11h-7

   The gardener charges £8 1 for a job. How many hours were worked? £59

   8 hours

Challenge

Write some of your own questions for someone else to solve.

Try these equations and then some of your own: 3h+8, 12a-6 and 9b+15

Express Missing Number Problems Algebraically

For each question, express the problems algebraically and then solve the problem.

Example:

Twelve more than three lots of a number is 36. What is the number?

$3n+12=36$ $n=8$

Note: With addition, answers can be either way round: $3n+12=36$, $12+3n=36$; but not subtraction.

1. Ten less than a number is 24. What is the number?

_____ _____

2. 15 is added to 3 lots of a number to make 45. What is the number?

_____ _____

3. Fifteen is subtracted from four times a number to make 29. What is the number?

_____ _____

4. Nineteen more than a number is 43. What is the number?

_____ _____

5. Five times a number has thirteen added to it to make 58. What is the number?

_____ _____

6. What number is multiplied by 4 and has 23 added to it to make 55?

_____ _____

7. What number has nineteen subtracted from it to make twenty-five?

_____ _____

8. 56 is the total of twenty three amd three times a number. What is the number?

_____ _____

Challenge

Write some of your own questions for others to work out.

Express Missing Number Problems Algebraically

1. A tile shop sells tiles online. Tiles that cover a square metre cost £m. Delivery is charged at £d.
   The area to be covered is a.
   Using the variables m, d and a, express the cost of tiles to cover area a _____.
   8 square metres of wall needs to be covered. The cost of the tiles is £9 per square metre.
   Delivery is £5. Calculate the cost of the tiles _____.
   A tiler decides to compare the cost of tiles from different suppliers.
   He uses the following table to calculate the different costs.

Supplier	m	a	d	cost
1	£6.00	12	£9.00	
2	£7.00	12	£5.00	
3	£8.00	12	£6.00	
4	£6.50	12	£2.00	
5	£7.50	12	£3.00	

Which supplier is the cheapest? _____
If the tiler wants tiles to cover $15m^2$, does the cheapest supplier remain the same?

---

2. A man wants to choose a plumber. He asks the plumbers what their hourly rate is, what their call out charge is and whether they offer a discount for early payment.
   Using letters to represent the four variables, express the cost of the plumber algebraically.

Create a table with the costs of 5 different plumbers. You will need to write your own costs.

Challenge

Use a spreadsheet and write a formula to calculate the costs.
Write your own scenario for others to express algebraically.

Express Missing Number Problems Algebraically Answers

For each question, express the problems algebraically and then solve the problem.

Example:

Twelve more than three lots of a number is 36. What is the number?

$3n+12=36$ $n=8$

Note: With addition, answers can be either way round: $3n+12=36$, $12+3n=36$; but not subtraction.

1. Ten less than two lots of a number is 24. What is the number?

   $2n-10=24$ $n=7$

2. 15 is added to three lots of a number to make 45. What is the number?

   $3n+15=45$ $n=10$

3. Fifteen is subtracted from four times a number to make 29. What is the number?

   $4n-15=29$ $n=11$

4. Nineteen more than two lots of a number is 43. What is the number?

   $2n+19=43$ $n=12$

5. Five times a number has thirteen added to it to make 58. What is the number?

   $5n+13=58$ $n=9$

6. What number is multiplied by 4 and has 23 added to it to make 55?

   $4n+23=55$ $n=8$

7. What number has nineteen subtracted from it to make twenty-five?

   $n-19=25$ $n=44$

8. 56 is the total of twenty three and three times a number. What is the number?

   $23+3n=56$ $n=11$

Challenge

Write some of your own questions for others to work out.

Express Missing Number Problems Algebraically Answers

1. A tile shop sells tiles online. Tiles that cover a square metre cost £m. Delivery is charged at £d.
   The area to be covered is a.
   Using the variables m, d and a, express the cost of tiles to cover area a. ma + d
   8 square metres of wall needs to be covered. The cost of the tiles is £9 per square metre.
   Delivery is £5. Calculate the cost of the tiles. £77
   A tiler decides to compare the cost of tiles from different suppliers.
   He uses the following table to calculate the different costs.

Supplier	m	a	d	cost
1	£6.00	12	£9.00	£81.00
2	£7.00	12	£5.00	£89.00
3	£8.00	12	£6.00	£102.00
4	£6.50	12	£2.00	£80.00
5	£7.50	12	£3.00	£93.00

Which supplier is the cheapest? Supplier 4
If the tiler wants tiles to cover $15m^2$, does the cheapest supplier remain the same?
no, supplier 1

2. A man wants to choose a plumber. He asks the plumbers what their hourly rate is, what their call out charge is and whether they offer a discount for early payment.
   Using letters to represent the four variables, express the cost of the plumber algebraically.
   cost=rh+c-d (where r=hourly rate, h-number of hours, c=call out charge, d=discount)
   Create a table with the costs of 5 different plumbers. You will need to write your own costs.

Challenge

Use a spreadsheet and write a formula to calculate the costs.
Write your own scenario for others to express algebraically.