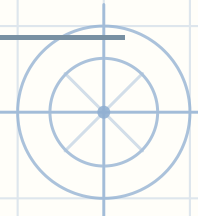


Algebra reasoning — Distributing

Name: _____

Date: _____



Read each line of working and choose the answer that is correct.

1 Imani wrote $6(x + 2) + 4(x + 3) = 10x + 24$. Which is correct?

$7x + 15$

$10x + 14$

$10x + 24$

$10x + 144$

Why? nothing went wrong — the line as written is already correct.

2 On Ben's paper: $4(x + 3) + 5(x + 7) = 5x + 19$. Which line should replace it?

$5x + 19$

$9x + 420$

$9x + 38$

$9x + 47$

Why?

3 Theo wrote $6(x + 7) + 3(x + 7) = 9x + 63$. Which is correct?

$7x + 49$

$9x + 882$

$9x + 63$

$9x + 28$

Why?

4 Check this line: $4(x + 7) + 6(x + 8) = 10x + 1344$. Which is correct?

$10x + 1344$

$10x + 76$

$5x + 36$

$10x + 55$

Why?

5 Theo's answer to $5(x + 7) + 4(x + 2)$ is $9x + 43$. Which is correct?

$9x + 280$

$9x + 15$

$6x + 37$

$9x + 43$

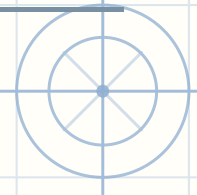
Why?



Algebra reasoning — Signs and dividing

Name: _____

Date: _____



Read each line of working and choose the answer that is correct.

1 Spot the mistake: $(5x + 30) \div 5 - (x + 3) = 9$. Which answer is right?

$x + 3$

27

9

3

Why? the minus reached the x in the second bracket but not the number.

2 On Mia's paper: $7(x + 7) - (x - 7) = 6x + 42$. Which line should replace it?

$6x + 14$

$6x + 56$

$6x + 42$

$8x + 42$

Why?

3 Theo says $(2x + 10) \div 2 - (x + 4)$ comes to $x + 1$. Which is correct?

$x + 1$

6

9

1

Why?

4 Noor wrote $4(x + 8) - (x - 5) = 3x + 27$. Which is correct?

$3x + 37$

$5x + 27$

$3x + 27$

$3x + 13$

Why?

5 Mia says $7(x + 5) - (x - 7)$ comes to $6x + 42$. Which is correct?

$8x + 28$

$6x + 42$

$6x + 12$

$6x + 28$

Why?

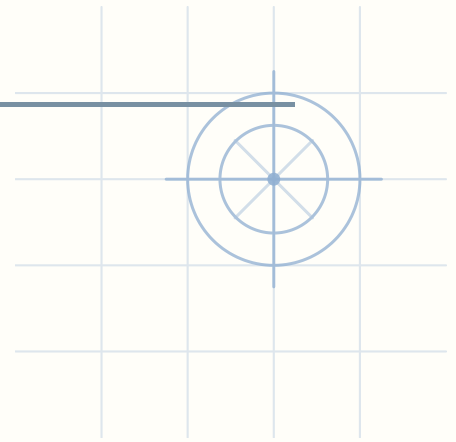


Algebra reasoning — Exponent laws

Name: _____

Date: _____

Read each line of working and choose the answer that is correct.



1 Mia says $(x^4)^2 \cdot x^3$ comes to x^{24} . Which is correct?

☒ x^{11}

☐ x^{24}

☐ x^9

☐ x^8

Why? the last power was multiplied in as well as the first two.

2 Priya wrote $(x^4)^4 \cdot x^2 = x^{32}$. What should it be?

☐ x^{18}

☐ x^{32}

☐ x^{10}

☐ x^{16}

Why?

3 Check this line: $(x^2)^4 \cdot x^3 = x^9$. Which is correct?

☐ x^{24}

☐ x^9

☐ x^8

☐ x^{11}

Why?

4 Priya says $x^4 \cdot x^4 \div x^2$ comes to x^2 . Which is correct?

☐ x^{14}

☐ x^6

☐ x^{10}

☐ x^2

Why?

5 On Priya's paper: $x^3 \cdot x^3 \div x^4 = x^4$. Which line should replace it?

☐ x^{10}

☐ x^5

☐ x^4

☐ x^2

Why?

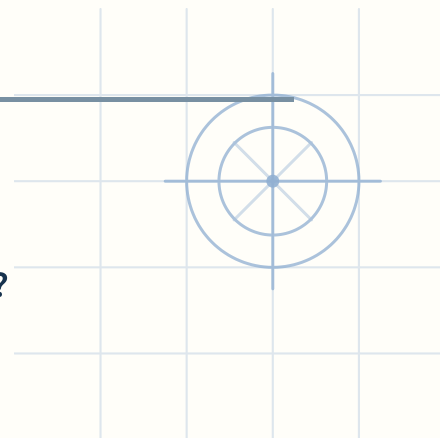


Algebra reasoning — Squaring a binomial

Name: _____

Date: _____

Read each line of working and choose the answer that is correct.



1 Imani's answer to $(x + 9)^2 - 81$ is $x^2 + 18x$. Which is correct?

x^2

$x^2 + 18x + 81$

$x^2 + 18x$

$x^2 + 9x$

Why? nothing went wrong — the line as written is already correct.

2 Sam says $(x + 3)^2 - 9$ comes to $x^2 + 6x$. Which is correct?

$x^2 + 6x$

$x^2 + 6x + 9$

$x^2 + 3x$

x^2

Why?

3 On Sam's paper: $(x + 6)^2 - 36 = 2x - 24$. Which line should replace it?

$x^2 + 12x + 36$

$2x - 24$

$x^2 + 12x$

$x^2 + 6x$

Why?

4 $(x + 11)^2 - 121 = x^2 + 22x + 121$ is wrong. Which is right?

$x^2 + 22x + 121$

x^2

$x^2 + 11x$

$x^2 + 22x$

Why?

5 Check this line: $(x + 8)^2 - 64 = x^2 + 8x$. Which is correct?

x^2

$x^2 + 16x + 64$

$x^2 + 8x$

$x^2 + 16x$

Why?

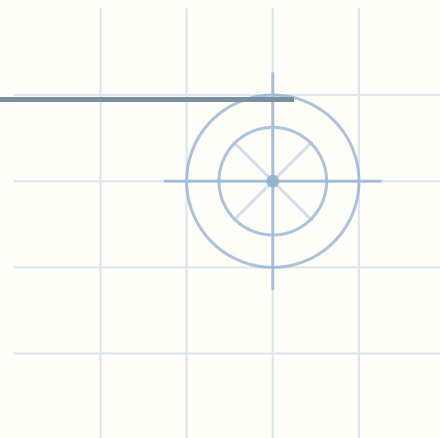


Algebra reasoning — Multiplying two brackets

Name: _____

Date: _____

Read each line of working and choose the answer that is correct.



1 Noor wrote $(x + 4)(x + 6) - x^2 = 10x + 24$. Which is correct?

$x^2 + 10x + 24$

24

$10x + 24$

$24x + 10$

Why? nothing went wrong — the line as written is already correct.

2 Ana wrote $(x + 3)(x + 4) - x^2 = x^2 + 7x + 12$. What should it be?

$x^2 + 7x + 12$

$12x + 7$

12

$7x + 12$

Why?

3 Priya's answer to $(x + 4)(x + 9) - x^2$ is $36x + 13$. Which is correct?

36

$x^2 + 13x + 36$

$13x + 36$

$36x + 13$

Why?

4 Priya says $(x + 4)(x + 7) - x^2$ comes to $11x + 28$. Which is correct?

$11x + 28$

$28x + 11$

28

$x^2 + 11x + 28$

Why?

5 Theo's answer to $(x + 8)(x + 9) - x^2$ is $17x + 17$. Which is correct?

$x^2 + 17x + 72$

$17x + 17$

$72x + 17$

$17x + 72$

Why?

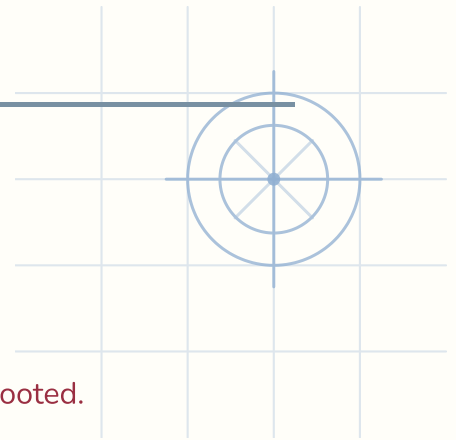


Algebra reasoning — Square roots

Name: _____

Date: _____

Read each line of working and choose the answer that is correct.



1 $\sqrt{(75x^2)} + \sqrt{(3x^2)} = x\sqrt{78}$ is wrong. Which is right?

$6x\sqrt{6}$

$x\sqrt{78}$

$6x$

$6x\sqrt{3}$

Why? the two insides were added under one root before either was rooted.

2 Noor says $\sqrt{(54x^2)} + \sqrt{(6x^2)}$ comes to $4x\sqrt{6}$. Which is correct?

$4x\sqrt{12}$

$4x\sqrt{6}$

$x\sqrt{60}$

$4x$

Why?

3 Check this line: $\sqrt{(4x^2)} + \sqrt{(16x^2)} = 6x$. Which is correct?

$20x$

$x\sqrt{20}$

$8x$

$6x$

Why?

4 Mia says $\sqrt{(4x^2)} + \sqrt{(49x^2)}$ comes to $x\sqrt{53}$. Which is correct?

$x\sqrt{53}$

$14x$

$9x$

$53x$

Why?

5 Sam's answer to $\sqrt{(32x^2)} + \sqrt{(2x^2)}$ is $5x\sqrt{4}$. Which is correct?

$x\sqrt{34}$

$5x\sqrt{2}$

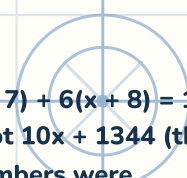
$5x$

$5x\sqrt{4}$

Why?



Power Pack · Find the algebra mistake — Answer key



Distributing

1. $6(x + 2) + 4(x + 3) = 10x + 24$, which is what was written — this line is correct

2. $4(x + 3) + 5(x + 7) = 9x + 47$, not $5x + 19$ (the second bracket was never multiplied out)

3. $6(x + 7) + 3(x + 7) = 9x + 63$, which is what was written — this line is correct

4. $4(x + 7) + 6(x + 8) = 10x + 76$, not $10x + 1344$ (the two numbers were multiplied together where they should be added)

5. $5(x + 7) + 4(x + 2) = 9x + 43$, which is what was written — this line is correct

Signs and dividing

1. $(5x + 30) \div 5 - (x + 3) = 3$, not 9 (the minus reached the x in the second bracket but not the number)

2. $7(x + 7) - (x - 7) = 6x + 56$, not $6x + 42$ (the minus reached the x in the second bracket but not the number)

3. $(2x + 10) \div 2 - (x + 4) = 1$, not $x + 1$ (the two x terms were never cancelled against each other)

4. $4(x + 8) - (x - 5) = 3x + 37$, not $3x + 27$ (the minus reached the x in the second bracket but not the number)

5. $7(x + 5) - (x - 7) = 6x + 42$, which is what was written — this line is correct

Exponent laws

1. $(x^4)^2 \cdot x^3 = x^{11}$, not x^{24} (the last power was multiplied in as well as the first two)

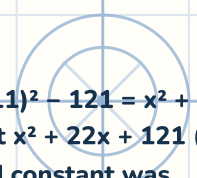
2. $(x^4)^4 \cdot x^2 = x^{18}$, not x^{32} (the last power was multiplied in as well as the first two)

3. $(x^2)^4 \cdot x^3 = x^{11}$, not x^9 (the stacked powers were added where they should be multiplied)

4. $x^4 \cdot x^4 \div x^2 = x^6$, not x^2 (the second power was taken away and the third one added)

5. $x^3 \cdot x^3 \div x^4 = x^2$, not x^4 (the second power was taken away and the third one added)

Power Pack · Find the algebra mistake — Answer key



Squaring a binomial

1. $(x + 9)^2 - 81 = x^2 + 18x$,
which is what was written
— this line is correct

2. $(x + 3)^2 - 9 = x^2 + 6x$,
which is what was written
— this line is correct

3. $(x + 6)^2 - 36 = x^2 + 12x$,
not $2x - 24$ (the bracket
was doubled instead of
squared)

4. $(x + 11)^2 - 121 = x^2 +$
 $22x$, not $x^2 + 22x + 121$ (the
squared constant was
never taken away again)

5. $(x + 8)^2 - 64 = x^2 + 16x$,
not $x^2 + 8x$ (the middle
term was not doubled
when the bracket was
squared)

Multiplying two brackets

1. $(x + 4)(x + 6) - x^2 = 10x +$
 24 , which is what was
written — this line is
correct

2. $(x + 3)(x + 4) - x^2 = 7x +$
 12 , not $x^2 + 7x + 12$ (the x^2
was never taken away
again)

3. $(x + 4)(x + 9) - x^2 = 13x +$
 36 , not $36x + 13$ (the sum
and the product changed
places)

4. $(x + 4)(x + 7) - x^2 = 11x +$
 28 , which is what was
written — this line is
correct

5. $(x + 8)(x + 9) - x^2 = 17x +$
 72 , not $17x + 17$ (the two
numbers were added where
they should be multiplied)

Square roots

1. $\sqrt{75x^2} + \sqrt{3x^2} = 6x\sqrt{3}$,
not $x\sqrt{78}$ (the two insides
were added under one root
before either was rooted)

2. $\sqrt{54x^2} + \sqrt{6x^2} = 4x\sqrt{6}$,
which is what was written
— this line is correct

3. $\sqrt{4x^2} + \sqrt{16x^2} = 6x$,
which is what was written
— this line is correct

4. $\sqrt{4x^2} + \sqrt{49x^2} = 9x$, not
 $x\sqrt{53}$ (the two insides were
added under one root
before either was rooted)

5. $\sqrt{32x^2} + \sqrt{2x^2} = 5x\sqrt{2}$,
not $5x\sqrt{4}$ (the parts left
under the roots were added
as well as the terms)