

Question ID e312081b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div><div></div><div></div><div></div></div>

ID: e312081b

$(x + 5) + (2x - 3)$

Which of the following is equivalent to the given expression?

- A. $3x - 2$
- B. $3x + 2$
- C. $3x - 8$
- D. $3x + 8$

ID: e312081b Answer

Correct Answer: B

Rationale

Choice B is correct. Using the associative and commutative properties of addition, the given expression $(x + 5) + (2x - 3)$ can be rewritten as $(x + 2x) + (5 - 3)$. Adding these like terms results in $3x + 2$.

Choice A is incorrect and may result from adding $(x - 5) + (2x + 3)$. Choice C is incorrect and may result from adding $(x - 5) + (2x - 3)$. Choice D is incorrect and may result from adding $(x + 5) + (2x + 3)$.

Question Difficulty: Easy

Question ID 8452c42b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div><div></div><div></div><div></div></div>

ID: 8452c42b

Which expression is equivalent to $50x^2 + 5x^2$?

- A. $250x^2$
- B. $10x^2$
- C. $45x^2$
- D. $55x^2$

ID: 8452c42b Answer

Correct Answer: D

Rationale

Choice D is correct. The given expression shows addition of two like terms. Therefore, the given expression is equivalent to $50 + 5x^2$, or $55x^2$.

Choice A is incorrect. This expression is equivalent to $505x^2$, not $50 + 5x^2$.

Choice B is incorrect. This expression is equivalent to $\frac{50}{5}x^2$, not $50 + 5x^2$.

Choice C is incorrect. This expression is equivalent to $50 - 5x^2$, not $50 + 5x^2$.

Question Difficulty: Easy

Question ID 1d3fee25

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div><div></div><div></div><div></div></div>

ID: 1d3fee25

Which of the following is equivalent to $3(x + 5) - 6$?

- A. $3x - 3$
- B. $3x - 1$
- C. $3x + 9$
- D. $15x - 6$

ID: 1d3fee25 Answer

Correct Answer: C

Rationale

Choice C is correct. Using the distributive property to multiply 3 and $(x + 5)$ gives $3x + 15 - 6$, which can be rewritten as $3x + 9$.

Choice A is incorrect and may result from rewriting the given expression as $3(x + 5 - 6)$. Choice B is incorrect and may result from incorrectly rewriting the expression as $(3x + 5) - 6$. Choice D is incorrect and may result from incorrectly rewriting the expression as $3(5x) - 6$.

Question Difficulty: Easy

Question ID 60fdb4d4

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div><div></div><div></div><div></div></div>

ID: 60fdb4d4

Which expression is equivalent to $(2x^2 - 4) - (-3x^2 + 2x - 7)$?

- A. $5x^2 - 2x + 3$
- B. $5x^2 + 2x - 3$
- C. $-x^2 - 2x - 11$
- D. $-x^2 + 2x - 11$

ID: 60fdb4d4 Answer

Correct Answer: A

Rationale

Choice A is correct. The given expression $(2x^2 - 4) - (-3x^2 + 2x - 7)$ can be rewritten as $2x^2 - 4 + 3x^2 - 2x + 7$. Combining like terms yields $5x^2 - 2x + 3$.

Choices B, C, and D are incorrect and may be the result of errors when applying the distributive property.

Question Difficulty: Easy

Question ID 4a5af623

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div><div></div><div></div><div></div></div>

ID: 4a5af623

Which expression is a factor of $2x^2 + 38x + 10$?

- A. 2
- B. $5x$
- C. $38x$
- D. $2x^2$

ID: 4a5af623 Answer

Correct Answer: A

Rationale

Choice A is correct. Since 2 is a common factor of each of the terms in the given expression, the expression can be rewritten as $2x^2 + 19x + 5$. Therefore, the factors of the given expression are 2 and $x^2 + 19x + 5$. Of these two factors, only 2 is listed as a choice.

Choice B is incorrect and may result from conceptual or calculation errors.

Choice C is incorrect. This is a term of the given expression, not a factor of the given expression.

Choice D is incorrect. This is a term of the given expression, not a factor of the given expression.

Question Difficulty: Easy

Question ID 49efde89

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div><div></div><div></div><div></div></div>

ID: 49efde89

The expression $2x^2 + ax$ is equivalent to $x(2x + 7)$ for some constant a . What is the value of a ?

- A. 2
- B. 3
- C. 4
- D. 7

ID: 49efde89 Answer

Correct Answer: D

Rationale

Choice D is correct. It's given that $2x^2 + ax$ is equivalent to $x(2x + 7)$ for some constant a . Distributing the x over each term in the parentheses gives $2x^2 + 7x$, which is in the same form as the first given expression, $2x^2 + ax$. The coefficient of the second term in $2x^2 + 7x$ is 7. Therefore, the value of a is 7.

Choice A is incorrect. If the value of a were 2, then $2x^2 + ax$ would be equivalent to $2x^2 + 2x$, which isn't equivalent to $x(2x + 7)$. Choice B is incorrect. If the value of a were 3, then $2x^2 + ax$ would be equivalent to $2x^2 + 3x$, which isn't equivalent to $x(2x + 7)$. Choice C is incorrect. If the value of a were 4, then $2x^2 + ax$ would be equivalent to $2x^2 + 4x$, which isn't equivalent to $x(2x + 7)$.

Question Difficulty: Easy

Question ID 9ed9f54d

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div><div></div><div></div><div></div></div>

ID: 9ed9f54d

Which of the following is equivalent to $2(x^2 - x) + 3(x^2 - x)$?

- A. $5x^2 - 5x$
- B. $5x^2 + 5x$
- C. $5x$
- D. $5x^2$

ID: 9ed9f54d Answer

Correct Answer: A

Rationale

Choice A is correct. Since $(x^2 - x)$ is a common term in the original expression, like terms can be added: $2(x^2 - x) + 3(x^2 - x) = 5(x^2 - x)$. Distributing the constant term 5 yields $5x^2 - 5x$.

Choice B is incorrect and may result from not distributing the negative signs in the expressions within the parentheses. Choice C is incorrect and may result from not distributing the negative signs in the expressions within the parentheses and from incorrectly eliminating the x^2 -term. Choice D is incorrect and may result from incorrectly eliminating the x-term.

Question Difficulty: Easy

Question ID 294db8ec

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div><div></div><div></div><div></div></div>

ID: 294db8ec

Which of the following is equivalent to $2x^3 + 4$?

- A. $4(x^3 + 4)$
- B. $4(x^3 + 2)$
- C. $2(x^3 + 4)$
- D. $2(x^3 + 2)$

ID: 294db8ec Answer

Correct Answer: D

Rationale

Choice D is correct. The expression $2x^3 + 4$ has two terms, $2x^3$ and 4. The greatest common factor of these two terms is 2. Factoring 2 from each of these terms yields $2(x^3) + 2(2)$, or $2(x^3 + 2)$.

Choices A and B are incorrect because 4 is not a factor of the term $2x^3$. Choice C is incorrect and may result from factoring 2 from $2x^3$ but not from 4.

Question Difficulty: Easy

Question ID 6e06a0a7

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div><div></div><div></div><div></div></div>

ID: 6e06a0a7

Which of the following expressions is equivalent to $2a^2(a+3)$?

- A. $5a^3$
- B. $8a^5$
- C. $2a^3+3$
- D. $2a^3+6a^2$

ID: 6e06a0a7 Answer

Correct Answer: D

Rationale

Choice D is correct. Expanding the given expression using the distributive property yields $2a^2(a)+2a^2(3)$. Combining like terms yields $2a^2(a^1)+(2\times3)(a^2)$, or $2a^{2+1}+6a^2$, which is equivalent to $2a^3+6a^2$.

Choices A and B are incorrect and may result from incorrectly combining like terms. Choice C is incorrect and may result from distributing $2a^2$ only to a, and not to 3, in the given expression.

Question Difficulty: Easy

Question ID df0ef054

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div><div></div><div></div><div></div></div>

ID: df0ef054

$(2x^3 + 3x)(x^3 - 2x)$

Which of the following is equivalent to the expression above?

- A. $x^3 + 5x$
- B. $3x^3 + x$
- C. $2x^6 - x^4 - 6x^2$
- D. $3x^6 - x^4 - 6x^2$

ID: df0ef054 Answer

Correct Answer: C

Rationale

Choice C is correct. Using the distributive property to multiply the terms in the parentheses yields $(2x^3 \cdot x^3) + (2x^3 \cdot -2x) + (3x \cdot x^3) + (3x \cdot -2x)$, which is equivalent to $2x^6 - 4x^4 + 3x^4 - 6x^2$. Combining like terms results in $2x^6 - x^4 - 6x^2$.

Choices A and D are incorrect and may result from conceptual errors when multiplying the terms in the given expression. Choice B is incorrect and may result from adding, instead of multiplying, $(2x^3 + 3x)$ and $(x^3 - 2x)$.

Question Difficulty: Easy

Question ID 127b2759

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div><div></div><div></div><div></div></div>

ID: 127b2759

Which expression is equivalent to $8 + d^2 + 3$?

- A. $d^2 + 24$
- B. $d^2 + 11$
- C. $d^2 + 5$
- D. $d^2 - 11$

ID: 127b2759 Answer

Correct Answer: B

Rationale

Choice B is correct. The given expression can be rewritten as $d^2 + 8 + 3$. Adding 8 and 3 in this expression yields $d^2 + 11$.

Choice A is incorrect. This expression is equivalent to $d^2 + 83$.

Choice C is incorrect. This expression is equivalent to $8 + d^2 - 3$.

Choice D is incorrect. This expression is equivalent to $-8 + d^2 - 3$.

Question Difficulty: Easy

Question ID fb96a5b3

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div><div></div><div></div><div></div></div>

ID: fb96a5b3

Which of the following expressions is equivalent to $2(ab - 3) + 2$?

- A. $2ab - 1$
- B. $2ab - 4$
- C. $2ab - 5$
- D. $2ab - 8$

ID: fb96a5b3 Answer

Correct Answer: B

Rationale

Choice B is correct. Applying the distributive property to the given expression yields $2(ab) + 2(-3) + 2$, or $2ab - 6 + 2$. Adding the like terms -6 and 2 results in the expression $2ab - 4$.

Choice A is incorrect and may result from multiplying ab by 2 without multiplying -3 by 2 when applying the distributive property. Choices C and D are incorrect and may result from computational or conceptual errors.

Question Difficulty: Easy

Question ID e597050f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div><div></div><div></div><div></div></div>

ID: e597050f

Which expression is equivalent to $9x + 6x + 2y + 3y$?

- A. $3x + 5y$
- B. $6x + 8y$
- C. $12x + 8y$
- D. $15x + 5y$

ID: e597050f Answer

Correct Answer: D

Rationale

Choice D is correct. Combining like terms in the given expression yields $9x + 6x + 2y + 3y$, or $15x + 5y$.

Choice A is incorrect and may result from conceptual or calculation errors.

Choice B is incorrect and may result from conceptual or calculation errors.

Choice C is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Easy

Question ID 1e8d7183

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div><div></div><div></div><div></div></div>

ID: 1e8d7183

Which expression is equivalent to $256w^2 - 676$?

- A. $(16w - 26)(16w - 26)$
- B. $(8w - 13)(8w + 13)$
- C. $(8w - 13)(8w - 13)$
- D. $(16w - 26)(16w + 26)$

ID: 1e8d7183 Answer

Correct Answer: D

Rationale

Choice D is correct. The given expression follows the difference of two squares pattern, $x^2 - y^2$, which factors as $x - yx + y$. Therefore, the expression $256w^2 - 676$ can be written as $16w^2 - 26^2$, or $16w16w - 2626$, which factors as $16w - 2616w + 26$.

Choice A is incorrect. This expression is equivalent to $256w^2 - 832w + 676$.

Choice B is incorrect. This expression is equivalent to $64w^2 - 169$.

Choice C is incorrect. This expression is equivalent to $64w^2 - 208w + 169$.

Question Difficulty: Easy

Question ID 0354c7de

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div><div></div><div></div><div></div></div>

ID: 0354c7de

$5x + 15$

Which of the following is equivalent to the given expression?

- A. $5(x + 3)$
- B. $5(x + 10)$
- C. $5(x + 15)$
- D. $5(x + 20)$

ID: 0354c7de Answer

Correct Answer: A

Rationale

Choice A is correct. Since 5 is a factor of both terms, **5x** and 15, the given expression can be factored and rewritten as **$5(x + 3)$** .

Choice B is incorrect and may result from subtracting 5 from the constant when factoring 5 from the given expression. Choice C is incorrect and may result from factoring 5 from only the first term, not both terms, of the given expression. Choice D is incorrect and may result from adding 5 to the constant when factoring 5 from the given expression.

Question Difficulty: Easy

Question ID fd4b2aa0

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div><div></div><div></div><div></div></div>

ID: fd4b2aa0

Which expression is equivalent to $12x^3 - 5x^3$?

- A. $7x^6$
- B. $17x^3$
- C. $7x^3$
- D. $17x^6$

ID: fd4b2aa0 Answer

Correct Answer: C

Rationale

Choice C is correct. The given expression shows subtraction of two like terms. The two terms can be subtracted as follows: $12x^3 - 5x^3 = 12 - 5x^3$, or $7x^3$.

Choice A is incorrect and may result from conceptual or calculation errors.

Choice B is incorrect. This is the result of adding, not subtracting, the two like terms.

Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Easy

Question ID 974d33dc

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div><div></div><div></div><div></div></div>

ID: 974d33dc

Which of the following expressions is equivalent to the sum of $(r^3 + 5r^2 + 7)$ and $(r^2 + 8r + 12)$?

- A. $r^5 + 13r^3 + 19$
- B. $2r^3 + 13r^2 + 19$
- C. $r^3 + 5r^2 + 7r + 12$
- D. $r^3 + 6r^2 + 8r + 19$

ID: 974d33dc Answer

Correct Answer: D

Rationale

Choice D is correct. Grouping like terms, the given expressions can be rewritten as $r^3 + (5r^2 + r^2) + 8r + (7 + 12)$. This can be rewritten as $r^3 + 6r^2 + 8r + 19$.

Choice A is incorrect and may result from adding the two sets of unlike terms, r^3 and r^2 as well as $5r^2$ and $8r$, and then adding the respective exponents. Choice B is incorrect and may result from adding the unlike terms r^3 and r^2 as if they were r^3 and r^3 and adding the unlike terms $5r^2$ and $8r$ as if they were $5r^2$ and $8r^2$. Choice C is incorrect and may result from errors when combining like terms.

Question Difficulty: Easy

Question ID d4d513ff

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	<div><div></div><div></div><div></div></div>

ID: d4d513ff

Which expression is equivalent to $12x + 27$?

- A. $12(9x + 1)$
- B. $27(12x + 1)$
- C. $3(4x + 9)$
- D. $3(9x + 24)$

ID: d4d513ff Answer

Correct Answer: C

Rationale

Choice C is correct. Each term in the given expression, $12x + 27$, has a common factor of 3. Therefore, the expression can be rewritten as $3(4x + 9)$, or $34x + 27$. Thus, the expression $3(4x + 9)$ is equivalent to the given expression.

Choice A is incorrect. This expression is equivalent to $108x + 12$, not $12x + 27$.

Choice B is incorrect. This expression is equivalent to $324x + 27$, not $12x + 27$.

Choice D is incorrect. This expression is equivalent to $27x + 72$, not $12x + 27$.

Question Difficulty: Easy