Question ID e312081b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	■□□

ID: e312081b

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

1.1

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 1d3fee25

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	■□□

ID: 1d3fee25

1.2

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	■□□

ID: 60fdb4d4

1.3

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 49efde89

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	■□□

ID: 49efde89

1.4

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	■□□

ID: 9ed9f54d

1.5

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	■□□

ID: 294db8ec

1.6

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	■□□

ID: 6e06a0a7

1.7

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	■□□

ID: df0ef054

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

1.8

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	■□□

ID: 127b2759

1.9

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 $d^2 + 8(3)$.

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	■□□

ID: fb96a5b3

1.10

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	■□□

ID: e597050f

1.11

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	■□□

ID: 1e8d7183

1.12

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 $(x - y)(x + y)$. Therefore, the expression $256w^2 - 676$ can be written as $(16w)^2 - 26^2$, or $(16w)(16w) - (26)(26)$, which factors as $(16w - 26)(16w + 26)$.

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	■□□

ID: 0354c7de

1.13

$5x+15$

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 974d33dc

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	■□□

ID: 974d33dc

1.14

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	■□□

ID: d4d513ff

1.15

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 $3(4x) + 3(9)$, or $3(4x + 9)$. 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

Question ID 5dd53f73

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	■□□

ID: 5dd53f73

1.16

Which expression is equivalent to $34x + 34y$?

A. $34xy$

B. $34(x + y)$

C. $68y$

D. $68x$

ID: 5dd53f73 Answer

Correct Answer: B

Rationale

Choice B is correct. Since 34 is a common factor of each term in the given expression, the expression can be rewritten as $34x + y$.

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

Choice C is incorrect. This expression is equivalent to $34y + 34y$.

Choice D is incorrect. This expression is equivalent to $34x + 34x$.

Question Difficulty: Easy

Question ID 4ac59df6

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	■□□

ID: 4ac59df6

1.17

Which expression is equivalent to $(8yz)(y)(7z)$?

A. $56y^2z^2$

B. $56y^2z$

C. $56yz$

D. $16yz$

ID: 4ac59df6 Answer

Correct Answer: A

Rationale

Choice A is correct. The given expression can be rewritten as $8 \cdot 7y \cdot yz \cdot z$, which is equivalent to $56y^2z^2$, or $56y^2z^2$.

Choice B is incorrect. This expression is equivalent to $8yzy7$. Choice C is incorrect. This expression is equivalent to $8zy7$.

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

Question Difficulty: Easy

Question ID 72ebc024

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Advanced Math	Equivalent expressions	■□□

ID: 72ebc024

1.18

Which expression is equivalent to $16x^3y^2 + 14xy$?

A. $2xy(8xy + 7)$

B. $2xy(8x^2y + 7)$

C. $14xy(2x^2y + 1)$

D. $14xy(8x^2y + 1)$

ID: 72ebc024 Answer

Correct Answer: B

Rationale

Choice B is correct. Since $2xy$ is a common factor of each term in the given expression, the expression can be rewritten as $2xy8x^2y + 7$.

Choice A is incorrect. This expression is equivalent to $16x^2y^2 + 14xy$.

Choice C is incorrect. This expression is equivalent to $28x^3y^2 + 14xy$.

Choice D is incorrect. This expression is equivalent to $112x^3y^2 + 14xy$.

Question Difficulty: Easy