Tennessee Comprehensive Assessment Program

TCAP

Integrated Math II
Item Release

TN Department of Education

Metadata- Math

Items

Page Number	UIN	Grade	Item Type	Key	DOK	TN Standards	Calculator
4	TN0010277	Int Math II	MC	A	1	M2.N.RN.A.1	N
5	TN0028424	Int Math II	MC	A	2	M2.S.ID.A.1a	Y
6	TN0032129	Int Math II	MS	A,D,E,F	2	M2.A.REI.A.1	Y
7	TN0032557	Int Math II	MC	C	2	M2.G.SRT.A.3	Y
8	TN0035915	Int Math II	MC	A	2	M2.N.RN.A.2	N
9	TN0082690	Int Math II	MC	C	2	M2.N.CN.B.3	Y
10	TN0082697	Int Math II	MS	B,E	2	M2.N.RN.A.2	Y
11	TN0086704	Int Math II	MS	B,E	2	M2.G.SRT.B.4	Y
12	TN0086887	Int Math II	MC	A	2	M2.F.BF.B.2	N
13	TN0086892	Int Math II	MC	D	2	M2.A.CED.A.3	Y
14	TN046092	Int Math II	MS	B,C,D	2	M2.N.CN.A.1	Y
15	TN048056	Int Math II	MC	D	2	M2.A.REI.B.2b	N
16	TN316778	Int Math II	MC	B	3	M2.S.CP.A.4	N
17	TN546548	Int Math II	MC	D	2	M2.F.BF.A.1b	Y
18	TN614168	Int Math II	MC	D	2	M2.A.APR.A.1	N
19	TN716739	Int Math II	MS	A,B,E	2	M2.F.IF.A.1	Y
20	TN748037	Int Math II	MS	A,E	2	M2.A.REI.C.4	Y
22	TN942893	Int Math II	MC	A	2	M2.G.GMD.A.1	Y

Metadata Definitions:

UIN	Unique letter/number code used to identify the item.
Grade	Grade level or Course.
Item Type	Indicates the type of item. MC= Multiple Choice; MS= Multiple Select
Key	Correct answer. This may be blank for constructed response items where students write or type their responses.
DOK	Depth of Knowledge (cognitive complexity) is measured on a three-point scale. 1 = Recall or simple reproduction of information; 2 = Skills and concepts: comprehension and processing of text; 3 = Strategic thinking, prediction, elaboration.
TN Standards	Primary educational standard assessed.
Calculator	Y for items that permit calculator use.

TN0010277_1

00. Which equation is a method to calculate the product of the expression shown?

$$(\sqrt{2})(\sqrt{2})$$

A. $(\sqrt{2})(\sqrt{2}) = 2^{\frac{1}{2}+\frac{1}{2}}$

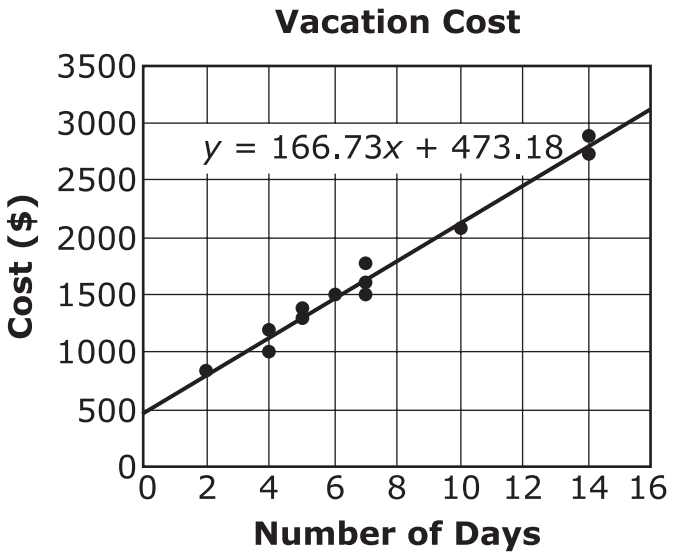
B. $(\sqrt{2})(\sqrt{2}) = 2^{\frac{1}{2}\cdot\frac{1}{2}}$

C. $(\sqrt{2})(\sqrt{2}) = 4^{\frac{1}{2}+\frac{1}{2}}$

D. $(\sqrt{2})(\sqrt{2}) = 4^{\frac{1}{2}\cdot\frac{1}{2}}$

TN0028424_1

00. Omar and his family stay at a cabin for their vacation. He recorded the cost of the last 12 vacations at the cabin. The graph shows the relationship between the number of days Omar and his family stayed at the cabin, and the cost of the vacation. A line of best fit and its equation are shown.



Based on the line of best fit, what is the greatest number of days Omar and his family can stay at the cabin, if he has $2400 to spend for the vacation?

A. 11 days

B. 12 days

C. 14 days

D. 17 days

TN0032129_1,4,5,6

00. Elizabeth solved an equation using the steps shown.

$$\frac{3(x-2)}{4} - 5 = -8$$
$$\frac{3(x-2)}{4} = -3$$
$$3(x-2) = -12$$
$$3x - 6 = -12$$
$$3x = -6$$
$$x = -2$$

Which properties did Elizabeth use in her solution?
Select the **four** correct answers.

A. addition property of equality

B. associative property of addition

C. commutative property of addition

D. distributive property

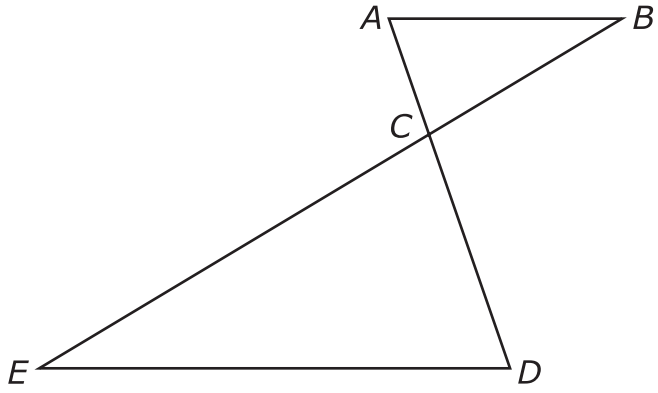
E. division property of equality

F. multiplication property of equality

TN0032557_3

00. Which reason justifies Step 2 in this AA Similarity proof?

Given: $\overline{AB}$ is parallel to $\overline{ED}$
Step 1: $\angle ACB \cong \angle DCE$
Step 2: $\angle ABE \cong \angle DEB$
Step 3: $\triangle ABC \sim \triangle DEC$



A. Corresponding angles are congruent.

B. Vertical angles are congruent.

C. Alternate interior angles are congruent.

D. Adjacent angles are congruent.

TN0035915_1

00. Which expression is equivalent to $\frac{\left(\sqrt[4]{w}\right)\left(\sqrt[8]{w^3}\right)}{\left(\sqrt[16]{w^9}\right)}$?

A. $w^{\frac{1}{16}}$

B. $w^{\frac{45}{128}}$

C. $w^{\frac{19}{16}}$

D. $w^{\frac{44}{9}}$

TN0082690_3

00. What are the solutions to the equation $3x^2 + 15 = 10x$?

A. $x = \frac{-5 \pm 2i\sqrt{5}}{3}$

B. $x = \frac{-5 \pm 4i\sqrt{5}}{3}$

C. $x = \frac{5 \pm 2i\sqrt{5}}{3}$

D. $x = \frac{5 \pm 4i\sqrt{5}}{3}$

TN0082697_2,5

00. Which expressions are equivalent to $\sqrt{2x} \cdot (2x^2)^{\frac{1}{3}}$, where $x > 0$?

Select **two** expressions.

A. $4x^{\frac{7}{6}}$

B. $2^{\frac{5}{6}}x^{\frac{7}{6}}$

C. $\sqrt[6]{4x^3}$

D. $x\sqrt[6]{4x}$

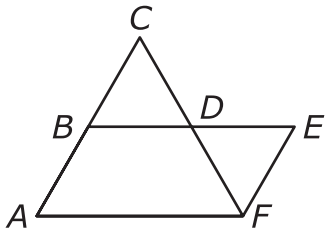
E. $x\sqrt[6]{32x}$

TN0086704_2,5

00. The given and prove statements of a proof are given.

Given: Quadrilateral $ABEF$ is a parallelogram.
Points B, D, and E are collinear.
Points A, B, and C are collinear.

Prove: $\Delta ACF \sim \Delta EFD$



Which two statements and reasons are sufficient to prove $\triangle ACF \sim \triangle EFD$?

Select the **two** that apply.

A. $\angle CDB \cong \angle EDF$ because all vertical angles are congruent.

B. $\angle CAF \cong \angle FED$ because opposite angles of a parallelogram are congruent.

C. $\angle ABE \cong \angle DEF$ because opposite angles of a parallelogram are congruent.

D. $\angle CBE \cong \angle CAF$ because if two parallel lines are cut by a transversal, then corresponding angles are congruent.

E. $\angle FCA \cong \angle DFE$ because if two parallel lines are cut by a transversal, then alternate interior angles are congruent.

TN0086887_1

00. The graph of $f(x) = |x|$ is reflected across the x-axis, then shifted 4 units up to create $g(x)$. Which equation represents $g(x)$?

A. $g(x) = -|x| + 4$

B. $g(x) = |-x| + 4$

C. $g(x) = -|x + 4|$

D. $g(x) = |-x + 4|$

TN0086892_4

00. A general formula to determine the height, h, of an object t seconds after it is thrown into the air is given.

$$h = -4.9t^2 + bt + c$$

Which equation represents b in terms of h, t, and c?

A. $b = \frac{h - 4.9t^2 + c}{t}$

B. $b = \frac{h - 4.9t^2 - c}{t}$

C. $b = \frac{h + 4.9t^2 + c}{t}$

D. $b = \frac{h + 4.9t^2 - c}{t}$

TN046092_2,3,4

00. Which statements are true?

Select **all** that apply.

A. $-\sqrt{12}$ is an imaginary number.

B. $\sqrt{-12}$ is an imaginary number.

C. $5i$ is a complex number.

D. $10 - 12i$ is a complex number.

E. $5 - i^4$ is an imaginary number.

TN048056_4

00. What is the solution to the equation?

$$2x^2 - 13x + 15 = 0$$

A. $x = -\frac{3}{2}$ or $x = -5$

B. $x = \frac{15}{2}$ or $x = -1$

C. $x = \frac{5}{2}$ or $x = 3$

D. $x = \frac{3}{2}$ or $x = 5$

TN316778_2

00. Consider two events:

- going to the beach while on vacation
- staying at a hotel while on vacation

Which statement is true about the relationship of the two events?

A. If the probability of going to the beach is equal to the probability of staying at a hotel and going to the beach, then the two events are independent.

B. If the probability of going to the beach is the same regardless of whether one is staying at a hotel, then the two events are independent.

C. If the probability of going to the beach is equal to the probability of staying at a hotel, then the two events do not affect each other.

D. If the probability of going to the beach is not equal to the probability of staying at a hotel, then the two events are dependent.

TN546548_4

00. Water is draining through a valve in the bottom of a large storage tank. The volume of water in the tank, in liters, t minutes after the valve is opened is given by the function shown.

$$v(t) = 3960\left(1 - \frac{t}{60}\right)^2$$

Each liter of water weighs approximately 2.2 pounds.

Which function describes $w(t)$, the approximate weight, in pounds, of the water remaining in the tank after t minutes?

A. $w(t) = 1800\left(1 - \frac{t}{60}\right)^2$

B. $w(t) = 1800\left(1 - \frac{2.2t}{60}\right)^2$

C. $w(t) = 8712\left(1 - \frac{2.2t}{60}\right)^2$

D. $w(t) = 8712\left(1 - \frac{t}{60}\right)^2$

TN614168_4

00. Given $f(x) = x^2 + 5x + 6$ and $g(x) = \frac{1}{2}(x - 1)^2$, which operation does **not** produce a polynomial?

A. $f(x) + g(x)$

B. $f(x) - g(x)$

C. $f(x) \times g(x)$

D. $f(x) \div g(x)$

TN716739_1,2,5

00. A website that introduces people of all ages to computer programming started with 10 members. The table shows several values of the function $f(x)$, the total number of members x years after the website began.

Age of Website (years)	0	1	2	3	4	5	6
Number of Members	10	40	160	640	2,560	10,240	40,960

Which statements accurately describe the function $f(x)$?

Select **all** that apply.

A. The domain is $x \geq 0$ and the range is $y \geq 10$.

B. The membership quadruples each year.

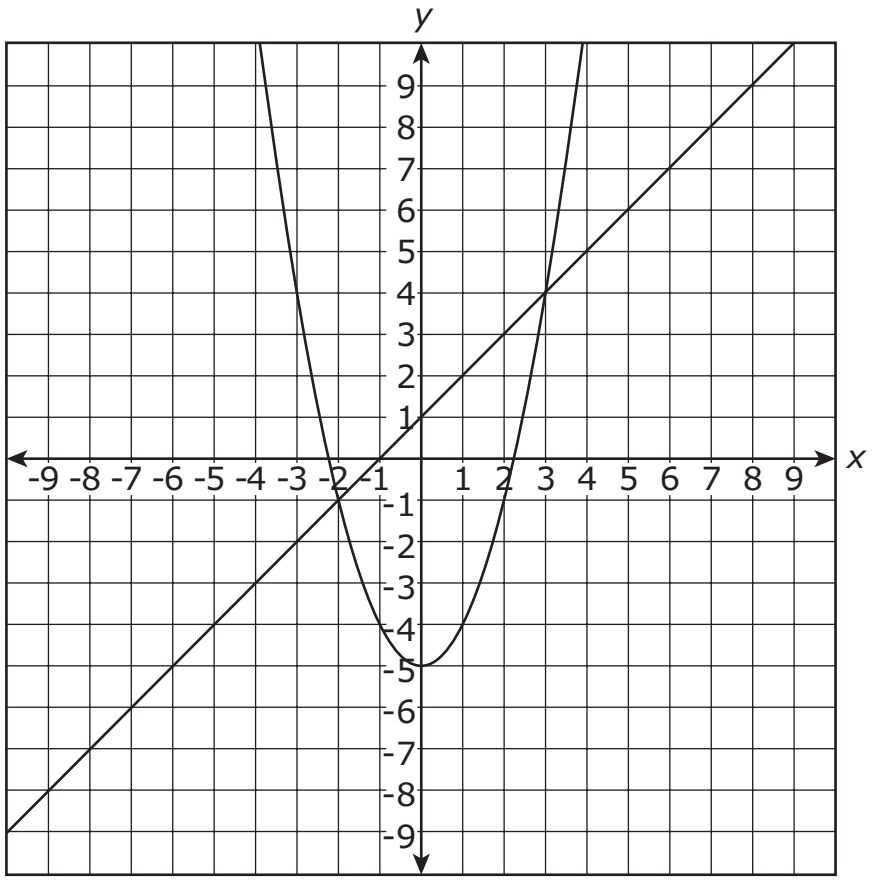
C. The function has a maximum value of 40,960.

D. The graph has symmetry about the vertical line $x = 6$.

E. The membership is predicted to be 163,840 when the website is 7 years old.

TN748037_1,5

00. The two equations $y = x^2 - 5$ and $x - y = -1$ are graphed on a coordinate plane.



What are the points of intersection?

Select **all** that apply.

A. $(-2, -1)$

B. $(-3,4)$

C. $(-5,0)$

D. $(2, -1)$

E. $(3, 4)$

F. There is no point of intersection.

TN942893_1

00. The base of a right triangular prism with height z is a right triangle with legs of length x and y. Which of these explains why the volume of the prism can be described by the equation $V = \frac{1}{2}xyz$?

A. Two of these prisms can be combined to form a rectangular prism with length x, width y, and height z.

B. Two of these prisms can be combined to form a triangular prism with legs of length x and y, and height $2z$.

C. Two of these prisms can be combined to form a rectangular prism with length $\frac{1}{2}x$, width $\frac{1}{2}y$, and height $\frac{1}{2}z$.

D. Two of these prisms can be combined to form a triangular prism with legs of length $\frac{1}{2}x$ and $\frac{1}{2}y$, and height $2z$.

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