Key

Secondary II

Alternate Final

A.APR.1 I can multiply polynomials.

1 Find the product:

$$-2x(2x^3 + 4x^2 - 8x)$$ $-4x^4 - 8x^3 + 16x^2$

ⓐ $4x^2 + x = 16$

ⓑ $-4x^2 - 8x^3 + 16x^2$

ⓒ $4x^2 - 16$

ⓓ $8x^3 - 64$

ⓔ $8x^3 - 48x^2 + 96x - 64$

A.APR.1 I can multiply polynomials.

2 Find the product:

$$(2x - 4)(2x + 4)$$ $4x^2 + 8x - 8x - 16$

ⓐ $4x^2 + x = 16$

ⓑ $-4x^2 - 8x^3 + 16x^2$

ⓒ $4x^2 - 16$

ⓓ $8x^3 - 64$

ⓔ $8x^3 - 48x^2 + 96x - 64$

N.RN.1 I can simplify expressions using properties of exponents.

3 Simplify:

$$\left(\frac{a^3}{2b^7c^{-2}}\right)^4$$ $\frac{a^{12}}{2^4 b^{28} c^{-8}} = \frac{a^{12}c^8}{16b^{28}}$

ⓐ $\frac{a^{12}c^8}{16b^{28}}$

ⓑ $\frac{-a^{12}}{2b^{28}c^8}$

ⓒ $\frac{a^{12}c^8}{2b^{28}}$

ⓓ $\frac{a^{12}c^{-8}}{16b^7}$

A.APR.1 I can add and subtract polynomials.

4 Simplify:

$$(x^2 - 3x + 8) + (2x^2 - 4x + 2)$$ $3x^2 - 7x + 10$

ⓐ $3x^2 + x + 10$

ⓑ $-x^2 - 7x + 6$

ⓒ $-x^2 + x + 6$

ⓓ $3x^2 - 7x + 10$

A.RN.2 I can extend the properties of integer exponents to rational exponents and use them to simplify expressions.

5 Simplify:

$$\sqrt[3]{40a^3b^8c^4}$$

$8 \cdot 5$

$2ab^2c\sqrt[3]{5b^2c}$

ⓐ $8ab^2c^3\sqrt[3]{5b^2c}$

ⓑ $2ab^4c^2\sqrt[3]{5a}$

ⓒ $2ab^2c\sqrt[3]{5b^2c}$

ⓓ $ab^2c^3\sqrt[3]{40}$

A.RN.2 I can extend the properties of integer exponents to rational exponents and use them to simplify expressions.

6 Simplify:

$$(16x^4y^8z)^{\frac{3}{4}}$$

$16^{3/4}x^3y^2z^{3/4}$

ⓐ $8x^3y^6z^{\frac{3}{4}}$

ⓑ $2x^{\frac{3}{4}}y^{\frac{3}{4}}z^{\frac{3}{4}}$

ⓒ $16x^3y^6z^{\frac{3}{4}}$

ⓓ $8x^{12}y^{24}z^3$

F.IF.4 I can determine key features of a quadratic function from its equation.

7 Find the vertex of $f(x) = 2x^2 - 8x + 4$.

$2(2)^2 - 8(2) + 4$

$8 - 16 + 4$

$x = \frac{8}{2(2)} = 2$

$V: (2, -4)$

ⓐ $(2, -4)$

ⓑ $(-2, 12)$

ⓒ $(-4, 2)$

ⓓ $(12, -2)$

F.BF.4 I can find the inverse of a function and the restrictions on its domain when necessary.

8 Find the inverse of $f(x) = \sqrt{x-1} + 3$ and state any restrictions to the domain.

original $y = \sqrt{x-1} + 3$

domain: $[1, \infty)$

Range: $[3, \infty)$

ⓐ $f^{-1}(x) = (x+3)^2 - 1$ *Domain*: $[1, \infty)$.

ⓑ $f^{-1}(x) = (x+3)^2 + 1$ *Domain*: $[3, \infty)$.

ⓒ $f^{-1}(x) = (x-3)^2 + 1$ *Domain*: $[3, \infty)$.

ⓓ $f^{-1}(x) = (x-3)^2 - 1$ *Domain*: $[1, \infty)$.

$x = \sqrt{y-1} + 3$

$x - 3 = \sqrt{y-1}$

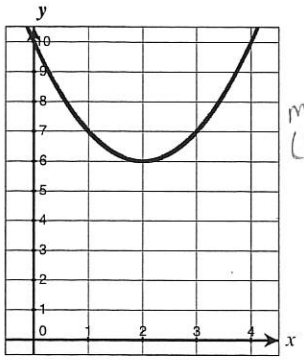
$(x-3)^2 = y - 1$

$y = (x-3)^2 + 1$

F.IF.9 I can compare and contrast two functions when each is represented differently.

9 Below are several representations of different quadratic functions. Which has the smallest minimum?

(a)



min (2,6)

(b)

x	f(x)
-4	14
-3	9
-2	6
-1	5
0	6
1	9
2	14

(c) $h(x) = (x-3)^2 + 7$

min (3,7)

(d) $j(x) = x^2 + 2x + 5$

1 -2 +5

$x = \frac{-2}{2(1)} = -1$

(-1, 4)

Use the following for problems 10 and 11:

The height of a baseball thrown into the air with an initial velocity of 88ft/sec can be modeled by the equation $h(t) = -16t^2 + 88t + 7$

F.IF.6 I can calculate average rate of change of a function over a specified interval using an equation or table. I can interpret the average rate of change of a function.

10 Find the average rate of change of $h(t)$ on the interval [0,2]. (slope)

plug 0 into equation

plug 2 into equation

(a) -56

(b) 56

(c) $\frac{841}{2}$

(d) $\frac{1}{56}$

(0,7) (2,119)

$m = \frac{7-119}{0-2} = \frac{-112}{-2} = 56$

F.IF.6 I can calculate average rate of change of a function over a specified interval using an equation or table. I can interpret the average rate of change of a function.

11 What is the meaning of the average rate of change found in problem 10?

(a) The velocity of the ball on the interval [0,2].

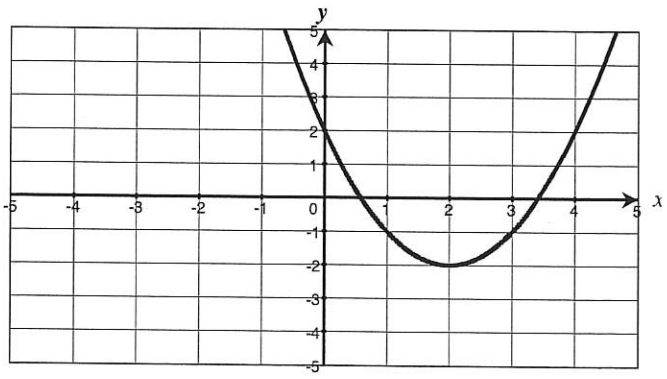
(b) The height of the ball on the interval [0,2].

(c) The average velocity of the ball on the interval [0,2].

(d) The average height of the ball on the interval [0,2].

F.IF.4 I can interpret key features of a quadratic equation.

12 Given the graph below state the intervals where the function is increasing or decreasing.



Decreasing
$(-\infty, 2)$

increasing
$(2, \infty)$

ⓐ *Increasing*: $[-3, \infty)$ *Decreasing*: $(-\infty, -3)$

ⓑ *Increasing*: $[2, \infty)$ *Decreasing*: $[-\infty, 2)$

ⓒ *Increasing*: $(2, \infty)$ *Decreasing*: $(-\infty, 2)$

ⓓ *Increasing*: $(-\infty, -1), \left(\frac{9}{2}, 2\right)$ *Decreasing*: $(-\infty, 2)$

F.IF.4 I can find key features of an absolute value function such as minimum, maximum and intercepts.

13 What is the vertex of $f(x) = -3|x + 2| + 1$ and does it represent a minimum or maximum of the function.

V:(-2,1) Max

ⓐ $(1, -2)$; *maximum*

ⓑ $(-2,1)$; *minimum*

ⓒ $(-2,1)$; *maximum*

ⓓ $(1,2)$; *minimum*

F.LE.3 I can compare and contrast key features of quadratic functions (such as rate of change) with linear and exponential functions.

14 As x gets larger which of the following types of functions will increase the fastest? (List from slowest increase to fastest increase)

I. Exponential II. Quadratic III. Linear

ⓐ II, III, I

ⓑ I, II, III

III, II, I

ⓒ III, II, I

ⓓ I, III, II

F.BF.3 I can recognize even and odd functions from their graphs and algebraic expressions.

15 Is the function $f(x) = 4x^2$ odd, even or neither?

symmetric with y-axis

ⓐ *Even*

ⓑ *Odd*

ⓒ *Both a & b*

ⓓ *Neither*

even: symmetric with y-axis
odd: symmetric with origin
Neither: everything else

F.IF.8 I can use factoring techniques to find the zeros of a quadratic function.

16 Factor completely $f(x) = 2x^2 - 7x + 6$ and use the factors to find where $f(x) = 0$.

ⓐ $(x-3)(2x-2);\ x=-3,\quad x=-1$

ⓑ $(x-2)(2x-3);\ x=-2,\quad x=-\frac{3}{2}$

ⓒ $(x-3)(2x-2);\ x=3,\quad x=1$

ⓓ $(x-2)(2x-3);\ x=2,\quad x=\frac{3}{2}$

$2x^2-7x+6$

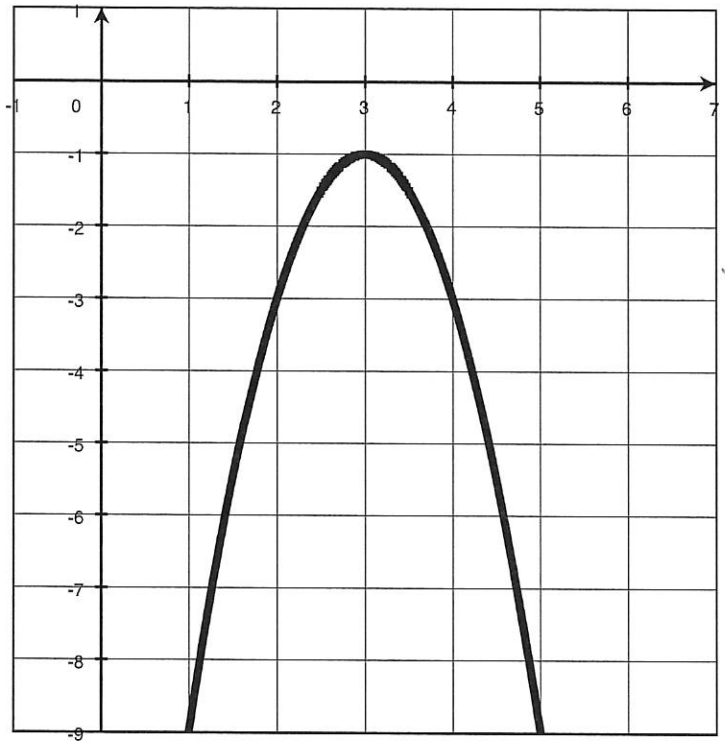
$1\cdot 2 \qquad 1\cdot 6$
$2\cdot 3$

$(2x-3)(x-2)$

$x=3/2 \quad x=2$

F.IF.9 I can write the equation for a quadratic function in either standard or vertex form given a graph or a table.

17 What is the equation of the parabola given in the graph in vertex form $y = a(x-h)^2 + k$?



$a=-2$

$V: (3,-1)$

$y=-2(x-3)^2-1$

ⓐ $y = 2(x+3)^2 - 1$

ⓑ $y = -2(x-3)^2 - 1$

ⓒ $y = -(x-3)^2 - 1$

ⓓ $y = (x+3)^2 - 1$

F.BF.1 I can combine standard function types by adding, subtracting, multiplying and composing in order to model real world situations.

18 The cost for a company to produce an item it sells is given by, $C(x) = 450 + 4x - .02x^2$ where x is the number of units. The revenue the company brings in is given by $R(x) = 11x$, where 11 represents the selling price in dollars. If profit is found by subtracting cost from revenue, find the profit function $P(x)$.

$P = R - C$

$P(x) = 11x - (450 + 4x - .02x^2)$

$P(x) = 11x - 450 - 4x + .02x^2$

$P(x) = .02x^2 + 7x - 450$

ⓐ $P(x) = 0.02x^2 + 15x - 450$

ⓑ $P(x) = 0.02x^2 + 7x - 450$

ⓒ $P(x) = -0.02x^2 + 7x - 450$

ⓓ $P(x) = -0.02x^2 + 15x - 450$

A.SSE.3 I can factor a quadratic expression.

19 Factor $36x^2 - 169y^2$. $(6x + 13y)(6x - 13y)$

ⓐ $(6x + 13y)(6x - 13y)$

ⓑ $(6x - 13y)^2$

ⓒ $(9x + 13y)(4x - 13y)$

ⓓ $(6x + 13y)^2$

A.CED.4 I can rearrange formulas to highlight a quantity of interest.

20 The surface area of a rectangular box is given by $S = 2hl + 2hw + 2lw$ where $l = length$, $w = width$ and $h = height$. Solve for l.

$S = 2hl + 2hw + 2lw$

$S - 2hw = 2hl + 2lw$

$S - 2hw = l(2h + 2w)$

$l = \frac{S - 2hw}{2h + 2w}$

ⓐ $l = \frac{s - 2hw}{2h + 2w}$

ⓑ $l = \frac{s - 2h - 2w}{2hw}$

ⓒ $l = \frac{s + 2hw}{2h + 2w}$

ⓓ $l = \frac{s - 2hw}{h + w}$

A.REI.4a; N.CN.7 I can solve a quadratic equation by a variety of methods including those with real coefficients and complex solutions.

21 Solve $2x^2 - 8x + 10 = 0$.

ⓐ $\{-1,5\}$

ⓑ No solution

ⓒ $\{-5,1\}$

ⓓ $\{2 + i, 2 - i\}$

$2(x^2 - 4x + 5) = 0$

$x = \frac{4 \pm \sqrt{16 - 4(1)(5)}}{2(1)}$

$x = \frac{4 \pm \sqrt{-4}i}{2} = \frac{4 \pm 2i}{2} = 2 \pm i$

A.CED.1 I can solve an inequality in one variable and express the solution in interval notation.

22 Solve $5x + 13 \leq 7(x - 1) - 4$.

$5x+13 \leq 7(x-1)-4$

$5x+13 \leq 7x-7-4$

$5x+13 \leq 7x-11$

$24 \leq 2x$

$12 \leq x$

ⓐ $[1, \infty)$ ⓑ $(-\infty, 2]$

ⓒ $(-\infty, -2]$ ⓓ $[12, \infty)$

N.CN.8 I can factor a quadratic expression over the complex number system.

23 Factor $x^2 + 9$ over the complex number system. $(x+3i)(x-3i)$

ⓐ $(x + 3)(x - 3)$ ⓑ $(x + 3i)(x - 3i)$

ⓒ $(x + 3i)(x + 3i)$ ⓓ $(x + 3)(x + 3)$

N.CN.9 I can apply the Fundamental Theorem of Algebra to polynomial equations.

24 How many solutions over the complex numbers does $x^2 - 10x + 34 = 0$ have?

$x = \frac{10 \pm \sqrt{100 - 4(1)(34)}}{2(1)}$

$x = \frac{10 \pm \sqrt{-36}}{2} = \frac{10 \pm 6i}{2}$

$x = 5 \pm 3i$

ⓐ 3 ⓑ 2

ⓒ 1 ⓓ None

A.REI.7 I can solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically.

25 Solve the following system: $\begin{cases} y = 2x + 1 \\ y = x^2 - 3x + 1 \end{cases}$

$2x+1 = x^2-3x+1$

$0 = x^2-5x$

$0 = x(x-5)$

$x = 0 \quad x = 5$

$(0, 1) \quad (5, 11)$

ⓐ $(0,1)(-1,-5)$ ⓑ $(0,0)(2,5)$

ⓒ $(1,-1)(1,3)$ ⓓ $(0,0)(1,0)$

None of these

A.SSE.3b I can find the minimum or maximum of a function by completing the square.

26 What 3 numbers are needed in the first step below to put ***f(x)*** into vertex form by the Completing the Square?

$$f(x) = 2x^2 - 12x + 23$$

$$f(x) = 2(x^2 - \underline{6x} + \underline{9}) + 23 + \underline{-18}$$

ⓐ $6, 9, -18$ ⓑ $-12, 36, -36$

ⓒ $-6, -9, 18$ ⓓ $12, 36, -72$

A.SSE.1b I can interpret the parts of an exponential function and understand their meaning in the context of real-life scenarios.

27 Consider $P(x)_{millions} = 308(1.097)^{\frac{x}{10}}$ to predict the current US population. Let x be the number of years ***since*** 2010 (i.e. x = 0 is 2010). Using the function $P(x)$, identify the current percent change and the 2010 population.

(a) 1.097%, 308 *Million*

(b) 9.7%, 308 *Million*

(c) 3.08%, 1.097 *Billion*

(d) 30.8%, 1.097 *Billion*

A.SSE.3c I can produce an equivalent form of an exponential function by using the properties of exponents.

28 Which of the following is an equivalent function for:

$$m(t) = 5.6\left(\frac{1}{2}\right)^t$$

$m(t)=5.6\left(2^{-1}\right)^t$

$m(t)=5.6(2)^{-t}$

(a) $m(t) = 2.8^t$

(b) $m(t) = 5.6(2)^{\frac{1}{t}}$

(c) $m(t) = 5.6(2)^{-t}$

(d) $m(t) = [5.6\left(\frac{1}{2}\right)^{\frac{1}{3}}]^{3t}$

A.REI.4b I can solve a quadratic equation by a variety of methods.

29 What are the roots of the quadratic equation $5x^2 = 80$?

$x^2 = 16$

$x = \pm\sqrt{16}$

$x = \pm 4$

(a) {4}

(b) {-16, 16}

(c) {-4, 4}

(d) {16}

A.REI.4b I can solve a quadratic equation by a variety of methods.

30 What are the x-intercepts of the function

$$p(x) = 3x^2 + 5x + 1$$

(a) $\left\{-\frac{1}{3}, -1\right\}$

(b) $\left\{\frac{-5+\sqrt{37}}{6}, \frac{-5-\sqrt{37}}{6}\right\}$

(c) $\left\{\frac{-5+\sqrt{13}}{6}, \frac{-5-\sqrt{13}}{6}\right\}$

(d) $\left\{\frac{4}{3}, -3\right\}$

$x = \frac{-5 \pm \sqrt{25-4(3)(1)}}{2(3)}$

$x = \frac{-5 \pm \sqrt{13}}{6}$

Use the following situation for **31** and **32**

A local grocery store chain as part of a major marketing campaign, issued a challenge to ten area schools. A reward of $50,000 would be split equally if students, parents, and school staff viewed enough of the company's new ad on YouTube.

Critical Facts to know:

To win, a quota of YouTube views needed to be reached!

I. Every day the quota increased by 500 to be reached by the end of that day. At any time during the contest, as soon as the total views met the current quota, the contest would end and the full $50K would be awarded to the schools.

$\{Ex: Daily\ Quotas: 500, 1000, 1500, 2000, \ldots\}$

II. The 10 principals realistically set a goal seeking to **double** the YouTube views daily beginning with 10 views the first day-one for each of them.

$\{Ex: The\ Goal\ for\ total\ Views: 10, 20, 40, 80, 160 \ldots\}$

They figured this way the video soon would go "viral" and they contest would be won.

Let the following equations represent the **R**equired quota ***R(d)*** and the **G**oal functions ***G(d).***
$\boldsymbol{R(d) = 500d}$ $\boldsymbol{G(d) = 10(2)^d}$ where $\boldsymbol{d}$ is the number of days since the contest started

A.REI.7 I can solve a system consisting of a linear and an exponential equation in two variables algebraically and graphically.

31 The grocery chain limited the challenge to fourteen days. Otherwise, a consolation reward of $1 per view would be awarded and split. **How much money was awarded?**

ⓐ $3,000 ⓑ $5,000

ⓒ $10,000 ⓓ $50,000

A.REI.7 I can solve a system consisting of a linear and an exponential equation in two variables algebraically and graphically.

32 If the schools were only able to get **50%** more views each day (instead of doubling),

$\{Ex. 10, 15, 22.5, 33.75 \ldots\}$

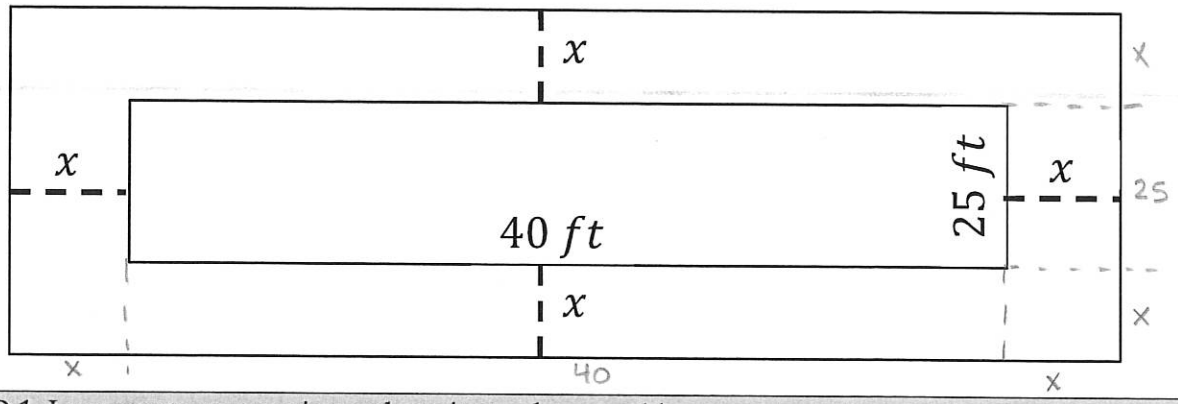
How much money would have been awarded?
*Hint: 50% changes **G(d)**, (Round to the nearest thousand)*

ⓐ $3,000 ⓑ $5,000

ⓒ $10,000 ⓓ $50,000

Use the following situation for 33

A student wants to put a sidewalk of equal width x around a rectangular garden in his backyard. The garden is $25ft$ by $40ft$ and the combined area of the sidewalk and the garden will be$1750ft^2$.



A.CED.1 I can create an equation and use it to solve a problem.

33 Find a function $f(x)$ that represents the combined area of the sidewalk and the garden and a function $g(x)$ that represents the area of the sidewalk.

$A(x) = (2x+25)(2x+40)$

$A(x) = 4x^2+80x+50x+1000$

$A(x) = 4x^2+130x+1000$

$g(x) = (2x+25)(2x+40)-1000$

(a) $f(x) = x^2 + 65x + 1000$ $g(x) = x^2 + 65x$

(b) $f(x) = 4x^2 + 130x + 1000$ $g(x) = 4x^2 + 130x$

(c) $f(x) = 65x^2$ $g(x) = 65x^2 - 100x$

(d) $f(x) = 2x^2 + 130x + 1000$ $g(x) = 2x^2 + 130$

A.REI.4b I can solve a quadratic equation.

34 Given $\boldsymbol{h(t) = -16t^2 + 80t + 96}$ where t is the time in seconds and h is the height in feet of an object thrown from a cliff, find the time it will take for the rock to hit the ground.

$0 = -16t^2+80t+96$

$0 = -16(t^2-5t-6)$

$0 = -16(t-6)(t+1)$

$t = 6 \quad t = -1$

(a) 1 second (b) 2 seconds

(c) 3 seconds (d) 6 seconds

S.CP.1 I can describe events as subsets of a sample space using the characteristics or categories of the outcomes.

35 Gustavo is picking a football jersey. His coach is allowing him to choose a jersey with a number from 1 to 20. He wants his number to be prime.

The sample space that represents the jersey numbers that he will choose from is:

(a) {1,2,3,5,7,9,11,13,17,19}

(b) {2,3,5,7,11,13,17,19}

(c) 8

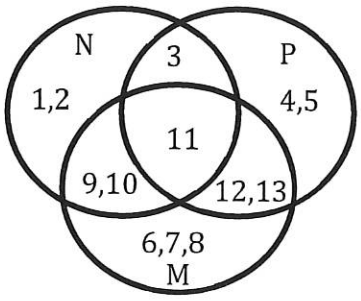
(d) {1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20}

(e) {1,3,5,7,9,11,13,15,17,19}

S.CP.1 I can describe events as unions, intersections or complements of events.

36 Given the Venn Diagram, what is the set M ∪ P?

- (a) {11, 12, 13}
- (b) {3,11,12,13}
- (c) {9,10,11,12,13}
- (d) {3,4,5,6,7,8,9,10,11,12,13}



S.CP.1 I can describe events as unions, intersections or complements of events.

37 The union of two events includes:

- (a) all outcomes from each event.
- (b) only those outcomes that are in both events.
- (c) all outcomes in the sample space that are not part of a given subset.
- (d) A and B

S.CP.1 I can describe events as unions, intersections or complements of events.

38 The intersection of two events includes:

- (a) all outcomes in the sample space that are not part of a given subset.
- (b) all outcomes from each event.
- (c) only those outcomes that are in both events.
- (d) A and C

S.CP.2 I can use correct notation to represent the probability of individual events.

39 You roll two standard dice and sum the two values. Which probability corresponds to a $\frac{1}{36}$ chance?

- (a) $P(sum\ of\ 3)$
- (b) $P(sum\ of\ 7)$
- (c) $P(sum\ of\ 2)$
- (d) $P(sum\ of\ 10)$

S.CP.2 I can recognize whether two events A & B are independent.

40 Which compound event consists of two or more independent events?

(a) Flipping a coin, setting it down, picking it up and flipping it again.

(b) Selecting a jellybean from a bag, eating it, and selecting another.

(c) Drawing a card from a deck, setting it aside, and drawing another card from the deck.

(d) Getting a green gumball from a gumball machine, and then getting a purple gumball from the same machine.

S.CP.2 I can calculate the probability that two independent events will both occur by finding the product of their individual probabilities.

41 You randomly choose two marbles, ***replacing*** the first marble before drawing again, from a bag containing 12 black, 6 red, 4 white, and 8 blue marbles.

Find the probability that a white marble is not selected, and then a red marble is selected.

(a) $0.17\overline{3}$ $\frac{26}{30} \cdot \frac{6}{30}$

(b) $1.0\overline{6}$

(c) 0.179

(d) $0.02\overline{6}$

S.CP.4 I can use two-way frequency tables to approximate conditional probabilities.

42 Use the frequency table to find $P(Blue \mid Female)$.

(a) 0.48

(b) 0.32

(c) 0.21

(d) 0.53

	Red	Blue	Yellow	Totals
Female	0.21	0.17	0.15	0.53
Male	0.16	0.18	0.13	0.47
Totals	0.37	0.34	0.29	1.00

$\frac{.17}{.53}$

S.CP.9 I can use permutations and combinations to compute probabilities and solve problems.

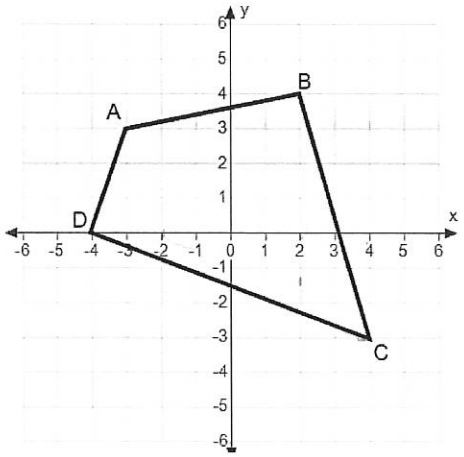
43 How many distinguishable permutations are in the word BANANA?

(a) 720 (b) 240 (c) 120 (d) 60

$\frac{6!}{3!2!}$

G.SRT.1 I can dilate images using a given center and scale factor.

44 If quadrilateral ABCD is transformed with a center of dilation at the origin and a scale factor of 0.5, then what has to be true of C'D'? Choose all the correct statements.



(a) C'D' is twice the length of CD.

(b) C'D' is the same length of CD.

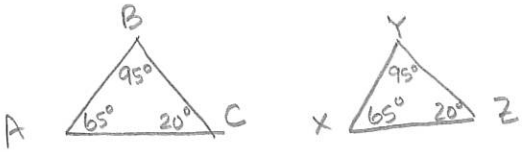
(c) C'D' is half the length of CD.

(d) C'D' is parallel to CD.

(e) C'D' is tangent to CD.

G.SRT.3 I can show two triangles are similar using AA similarity.

45 In ΔABC, $m\angle A = 65^\circ$ and $m\angle B = 95^\circ$, and in ΔXYZ, $m\angle X = 65^\circ$ and $m\angle Z = 20^\circ$. What has to be true of triangles ΔABC and ΔXYZ?



(a) $\Delta ABC \sim \Delta XYZ$

(b) $\Delta ABC \cong \Delta XYZ$

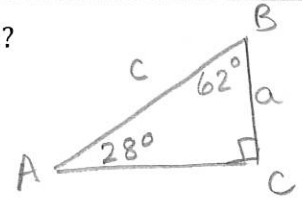
(c) ΔABC is larger than ΔXYZ

(d) ΔABC is smaller than ΔXYZ

(e) Not enough information given

G.SRT.7 I can explain and use the relationship between the sine and cosine of complementary angles.

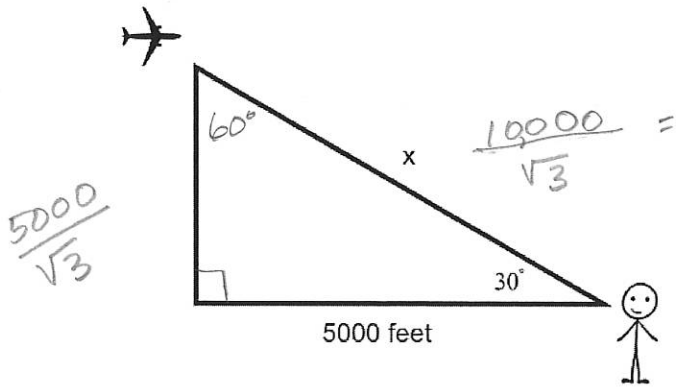
46 If $\sin 28^\circ = \frac{a}{c}$, then what angle would make $\cos\_\_\_^\circ = \frac{a}{c}$?



(a) 28° (b) 62° (c) 90° (d) 152°

G.SRT.8 I can use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.

47



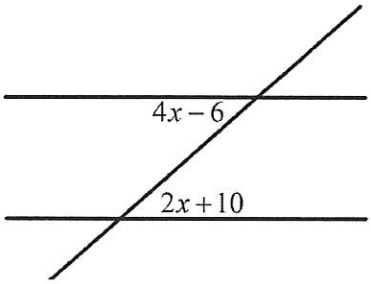
$\frac{5000}{\sqrt{3}}$ $\frac{10000}{\sqrt{3}} =$

Mark was watching an airplane fly toward him. The angle of elevation between him and the plane is 30° and the horizontal distance is 5000 feet. What is the distance, x, between Mark and the airplane?

(a) 2500 ft (b) 4330.1 ft (c) 5773.5 ft (d) 8660.3 ft (e) 10000 ft

G.CO.9 I can prove theorems about lines and angles, such as: Vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.

48



$4x-6=2x+10$

$2x=16$

$x=8$

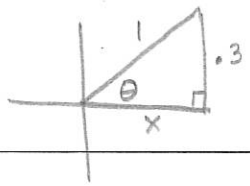
What value of x would prove that the two lines shown above are parallel?

(a) 2 (b) 8 (c) 14.3 (d) 29.3

G.GPE.6 I can find the point on a directed line segment between two given points that partitions the segment in a given ratio.

49 If $\sin\theta = 0.3$, then what is $\cos\theta$, if θ is in the first quadrant?

(a) 0.70 (b) 0.91 (c) 0.95 (d) 17.45

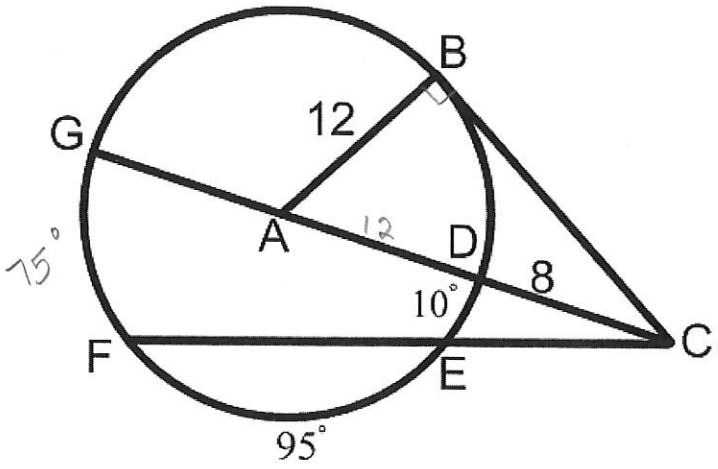


$x^2+.3^2=1^2$

$x=.95$

G.C.2 I can describe the relationship between central, inscribed, and circumscribed angles, and radii, and chords.

50 $\overline{BC}$ is a tangent, and $\overline{CG}$ and $\overline{CF}$ are secants. *The figure is not drawn to scale.*



What is $m\widehat{GF}$?

ⓐ 65° ⓑ 70°

ⓒ 75° ⓓ 80°

G.GPE.1 I can derive the equation of a circle given the center and radius, and complete the square to find the center and radius when given an equation.

51 What is the equation of the circle with a center of (2,-3) and a radius of 8?

ⓐ $(x+2)^2+(y-3)^2=8$
ⓑ $(x+2)^2+(y-3)^2=64$
ⓒ $(x-2)^2+(y+3)^2=8$
ⓓ $(x-2)^2+(y+3)^2=64$

$(x-2)^2+(y+3)^2=64$

G.GPE.1 I can derive the equation of a circle given the center and radius, and complete the square to find the center and radius when given an equation.

52 Complete the square to find the center and radius of the circle with the equation $x^2-4x+y^2+6y=-4$.

$x^2-4x+\underline{4}+y^2+6y+\underline{9}=-4+4+9$

$(x-2)^2+(y+3)^2=9$

ⓐ *Center* : $(-2,3)$ *Radius* : 9

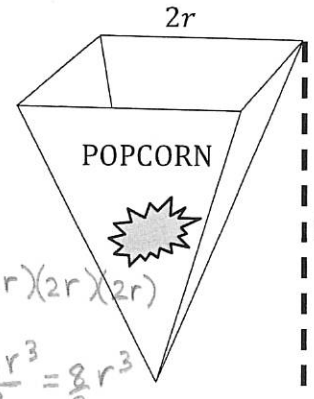
ⓑ *Center* : $(2,-3)$ *Radius* : 3

ⓒ *Center* : $(2,-3)$ *Radius* : 9

ⓓ *Center* : $(-2,3)$ *Radius* : 3

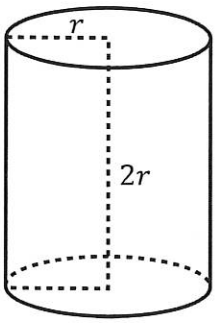
G.GMD.3 I can use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.

53 A movie theater sells two different containers for popcorn. The larger one is the shape of a cylinder and is sold for \$6.00. The smaller one is a square pyramid. The dimentions of the containers are shown in the figures below. What would be a fair price to charge for the smaller popcorn?



$V = \frac{1}{3}(2r)(2r)(2r)$

$V = \frac{8r^3}{3} = \frac{8}{3}r^3$



\$6.00

$V = 2r(\pi r^2)$

$V = 2\pi r^3$

$\frac{8/3\, r^3}{x} = \frac{2\pi r^3}{6.00}$

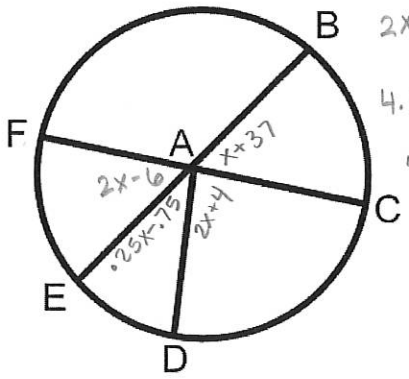
$16r^3 = 2\pi r^3 x$

$x = 2.55$

ⓐ \$2.00 ⓑ \$2.55 ⓒ \$3.00 ⓓ \$3.85

G.C.2 I can describe the relationship between central, inscribed, and circumscribed angles, and radii, and chords.

54 $\overline{BE}$ and $\overline{CF}$ are diameters of the circle. $m\angle FAE = 2x-6$, $m\angle EAD = 0.25x-0.75$, $m\angle DAC = 2x+4$, and $m\angle CAB = x+37$. *The figure is not drawn to scale.*



$2x-6+.25x-.75+2x+4+x+37 = 180$

$4.25x - 2.75 = 180$

$4.25x = 182.75$

$x = 43$

What is the value of x?

ⓐ 21.5 ⓑ 28

ⓒ 31 ⓓ 43

G.C.5 I can find arc lengths and areas of sectors.

55 What is the **arc length** of a sector that has a radius of 3 ft and a central angle of 135°?

ⓐ 7.07 *ft* ⓑ 10.60 *ft*

ⓒ 14.14 *ft* ⓓ 18.85 *ft*

$s = r\theta$

$s = 3(3\pi/4)$

$s = 7.07$ ft

$135^\circ\left(\frac{\pi}{180^\circ}\right) = \frac{3\pi}{4}$

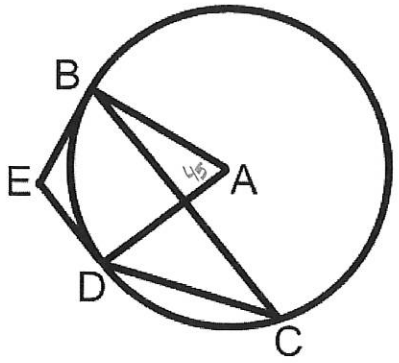
G.C.2 I can describe the relationship between central, inscribed, and circumscribed angles, and radii, and chords.

56 $\overline{EB}$ and $\overline{ED}$ are tangent to the circle, and $m\widehat{BD} = 45^\circ$. The figure is not drawn to scale.

What is $m\angle A$?

ⓐ 22.5° ⓑ 45°

ⓒ 50° ⓓ 90°



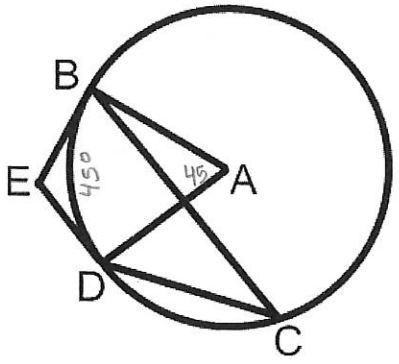
G.C.2 I can describe the relationship between central, inscribed, and circumscribed angles, and radii, and chords.

57 $\overline{EB}$ and $\overline{ED}$ are tangent to the circle, and $m\widehat{BD} = 45^\circ$. The figure is not drawn to scale.

What is $m\angle E$?

ⓐ 90° ⓑ 135°

ⓒ 270° ⓓ 315°



$\angle E = \frac{1}{2}(m\overset{\frown}{DCB} - m\overset{\frown}{BD})$

$\angle E = \frac{1}{2}(315^\circ - 45^\circ)$

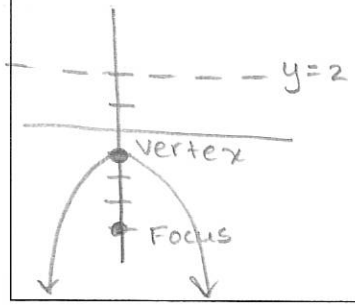
$\angle E = 135^\circ$

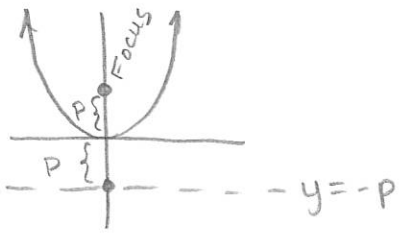
G.GPE.2 I can derive the equation of a parabola given a focus and dirctrix.

58 What is the equation of the parabola that has a focus of (0,-4) and a directrix of $y = 2$?

ⓐ $y = \frac{1}{12}x^2 - 1$ ⓑ $y = \frac{3}{4}x^2 - 1$ ⓒ $y = -\frac{1}{12}x^2 - 1$ ⓓ $y = -\frac{3}{4}x^2 - 1$

$x^2 = 4py$ p = distance from Focus to vertex
directrix to vertex



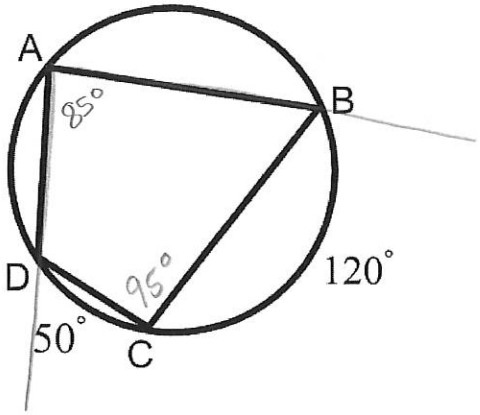


$x^2 = 4(3)y$

$y = -\frac{1}{12}x^2$

G.C.3 I can construct inscribed and circumscribed circles of a triangle, and prove properties of angles of an inscribed quadrilateral.

59

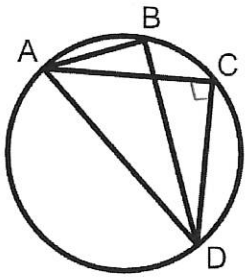


What is $m\angle C$?

ⓐ 85° ⓑ 95° ⓒ 170° ⓓ 190°

G.C.2 I can describe the relationship between central, inscribed, and circumscribed angles, and radii, and chords.

60 $\overline{AD}$ is a diameter of the circle below. What is $m\angle C$?



ⓐ 80° ⓑ 85° ⓒ 90° ⓓ 95°