

Tennessee Comprehensive Assessment Program TCAP

Integrated Math I Practice Test



Please PRINT all information in the box.

Student Name: _____

Teacher Name: _____

School: _____

District: _____

All practice test items represent the appropriate grade level/content standards—however, the practice test may contain item types that no longer appear on the operational assessment.



TNReady Math Reference Sheet—High School

<p>1 inch = 2.54 centimeters 1 mile = 5,280 feet 1 mile = 1,760 yards 1 mile = 1.609 kilometers 1 kilometer = 0.62 mile 1 meter = 39.37 inches</p> <p>1 pound = 16 ounces 1 pound = 0.454 kilograms 1 kilogram = 2.2 pounds 1 ton = 2,000 pounds</p> <p>1 cup = 8 fluid ounces 1 pint = 2 cups 1 quart = 2 pints 1 gallon = 4 quarts 1 gallon = 3.785 liters 1 liter = 0.264 gallons 1 liter = 1,000 cubic centimeters</p>	<p>Exponential Growth: $y = a(1 + r)^t$</p> <p>Exponential Decay: $y = a(1 - r)^t$</p> <p>Compound Interest: $A = P\left(1 + \frac{r}{n}\right)^{nt}$</p> <p>Continually Compounding Interest: $A = Pe^{rt}$</p> <p>Arithmetic Sequence: $a_n = a_1 + (n - 1)d$</p> <p>Geometric Sequence: $a_n = a_1(r)^{n-1}$</p> <p>Finite Geometric Series: $S_n = \frac{a_1(1 - r^n)}{1 - r}$</p> <p>Degrees: 1 degree = $\frac{\pi}{180}$ radians</p> <p>Radians: 1 radian = $\frac{180}{\pi}$ degrees</p>
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Directions

This test has Subpart 1, Subpart 2, and Subpart 3. Each subpart contains various types of assessment questions.

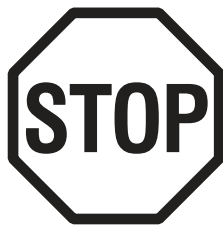
You MAY NOT use a calculator in Subpart 1 of this test.

Sample: Multiple choice (one correct response)

The vertices of $\triangle PQR$ are $P(-2, 5)$, $Q(2, 2)$ and $R(0, -3)$. A transformation defined by $(x - 3, y + 1)$ is applied to produce the image $\triangle P'Q'R'$.

What are the coordinates of vertex P' ?

- A.** $(-5, 4)$
- B.** $(-5, 6)$
- C.** $(1, 4)$
- D.** $(1, 6)$



Do not go on to the next page until told to do so.



1 Select **all** tables that could represent a function.

A.

x	y
-4	8
-1	2
1	-3
4	9

D.

x	y
5	1
5	2
5	3
5	4

B.

x	y
0	3
2	3
4	5
6	5

E.

x	y
-3	0
-2	0
-1	0
0	0

C.

x	y
1	-1
3	-4
3	-6
7	-9



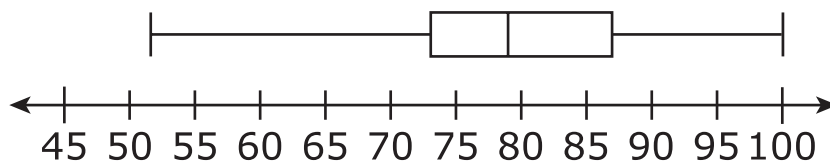
- 2 Grace and her brother need \$400 to go to band camp. Their parents have agreed to help them earn money by paying them \$25 each time they mow the lawn and \$10 for each hour they babysit their younger brother. They will have to do a combination of both chores to earn the money.

Select the equation that represents the number of lawns they can mow, m , and hours they can babysit, b , to earn \$400.

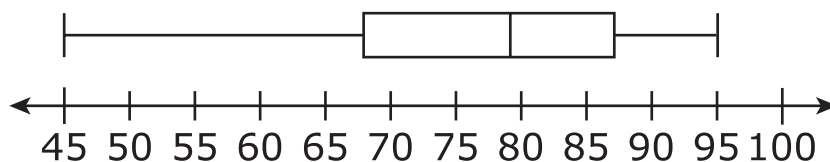
- M. $10m + 25b = 400$
 P. $10m - 25b = 400$
 R. $25m + 10b = 400$
 S. $25m - 10b = 400$

- 3 Two of Ms. Cole's Earth science classes have 23 students each. Box plots for recent test scores for these two classes are displayed.

Third Period



Fifth Period



Which statement about the scores is true?

- A. The means of the two sets of data are equal.
 B. The lower quartiles of the two sets of data are the same.
 C. More students in third period than in fifth period scored an 87 or above.
 D. Fewer students in third period than in fifth period scored a 70 or below.



- 4** A scientist uses the equation $p(t) = 2^{t+3}$ to model the growth of a bacteria, where t is the time, in hours, after the scientist begins the experiment.

Which equation is equivalent to the equation the scientist uses?

- M.** $p(t) = 8(2^t)$
- P.** $p(t) = 6(2^t)$
- R.** $p(t) = 3(2^t)$
- S.** $p(t) = 2(8^t)$

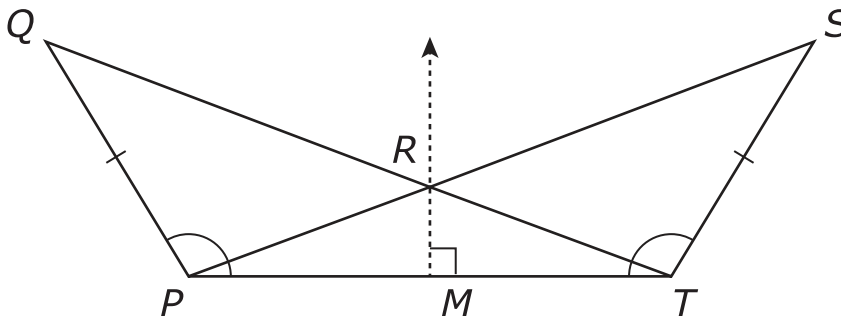
- 5** The balance of an account after t years can be found using the expression $6000(1.02)^t$ where the initial balance was \$6000.

By what percent does the account increase annually?

- A.** 0.02%
- B.** 1.02%
- C.** 2%
- D.** 102%



- 6 The triangles QTP and SPT are shown. Ray MR is the perpendicular bisector of line segment PT and intersects line segment PT at point M .



Which transformation would indicate that $\triangle QTP \cong \triangle SPT$?

- M. horizontal translation the length of \overline{PR}
 - P. horizontal translation the length of \overline{PT}
 - R. reflection over \overline{QT}
 - S. reflection over \overrightarrow{MR}
- 7 Which pair **best** represents a causation relationship?
- A. a person's age and his/her shoe size
 - B. the number of ice cream cones sold and the amount of sunscreen sold
 - C. the temperature at a football game and the number of hot drinks sold
 - D. the number of people attending a ballgame and the length of the ballgame



**This is the end of Subpart 1 of the Integrated Math I Test.
Do not go on to the next page until told to do so.**

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on this page**

Directions

Subpart 2 of this test contains various types of assessment questions.

You MAY use a calculator in Subpart 2 of this test.



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- 8 The function $p(t) = 3(2)^t$ represents the population of a certain type of bacteria after t days.

What is the population of the bacteria after 5 days?

Write your answer in the space provided.

- 9 Solve the inequality.

$$4x - 7 \geq \frac{-12x + 14}{4}$$

A. $x \geq \frac{7}{2}$

B. $x \leq \frac{7}{2}$

C. $x \geq \frac{3}{2}$

D. $x \leq \frac{3}{2}$



- 10** One end of a metal spring is attached to a ceiling. The other end of the spring hangs down.

The table displays the length of the spring when different masses are tied to the end of the spring that hangs down.

Mass Tied to Spring (kg)	Length of Spring (cm)
0	439.0
2	439.1
4	439.2
6	439.3

How much longer does the spring become with each extra kilogram of mass that is tied to it?

- M.** 0.01 cm
- P.** 0.05 cm
- R.** 0.1 cm
- S.** 0.5 cm



- 11** Jackie buys 3 hot dogs and 1 pretzel from a restaurant for \$12.25. Sylvia buys 2 hot dogs and 4 pretzels from the same restaurant for \$16.50.

Part A

Which system of equations can be used to determine the price of a hot dog, h , and a pretzel, p , at the restaurant?

- A.** $2h + 1p = 12.25$
 $3h + 4p = 16.50$
- B.** $3h + 2h = 12.25$
 $1p + 4p = 16.50$
- C.** $2h + 4p = 12.25$
 $3h + 1p = 16.50$
- D.** $3h + 1p = 12.25$
 $2h + 4p = 16.50$

Part B

What is the price of a hot dog, in dollars, at the restaurant?

Enter your answer in the space provided.



- 12** Jesse sent an email to 4 people for a school project. In her email, she requested that each person copy and send the same email to 4 additional people.

If everyone continues to send the email as requested, which equation could be used to determine the number of emails, y , that will be sent for a given round, x ?

M. $y = x^4$

P. $y = 4^x$

R. $y = 4x$

S. $y = \frac{4}{x}$

- 13** The height, in inches, of each student in Megan's algebra class is shown.

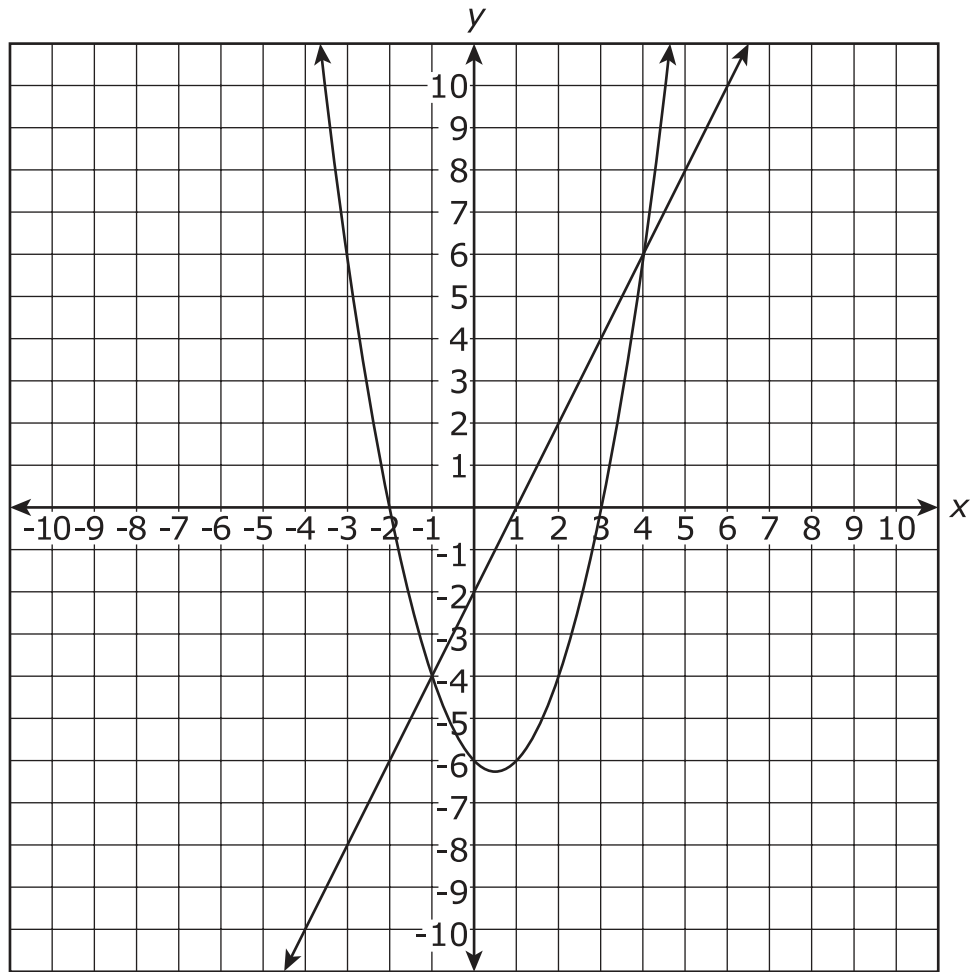
54	58	59	62	62
62	63	64	65	65
65	66	67	69	70
70	70	71	72	72

Select the **three** measures that will be affected if a student who is 77 inches tall joins the class.

- A.** interquartile range
- B.** mean
- C.** median
- D.** range
- E.** standard deviation



- 14 The graph of two functions is shown on the coordinate plane.



Select **all** values of x for which $f(x) = g(x)$.

- M. -2
- P. -1
- R. 1
- S. 3
- T. 4



- 15** John has a goal to ride his bike 100 miles this summer. John has ridden 12 miles thus far. There are 40 days left in the summer.

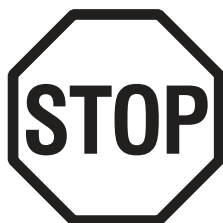
What is the average number of miles John must ride per day to reach his goal of 100 miles?

Enter your answer in the space provided.

- 16** Jamie deposits \$627 into a savings account. The account has an interest rate of 3.5%, compounded quarterly.

Write the function that gives the amount of money in dollars, $J(t)$, in Jamie's account t years after the initial deposit.

Write your answer in the space provided.



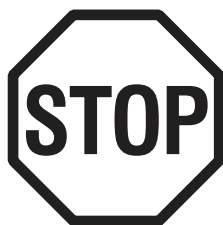
**This is the end of Subpart 2 of the Integrated Math I Test.
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Directions

Subpart 3 of this test contains various types of assessment questions.

You MAY use a calculator in Subpart 3 of this test.

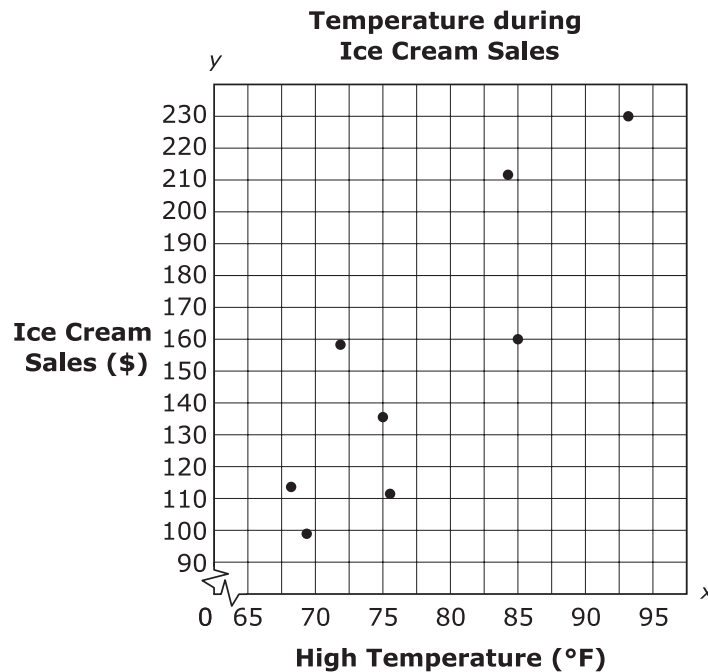


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- 17** Samantha owns a local ice cream stand. She recorded the high temperatures, in degrees Fahrenheit, and her ice cream sales, in dollars, for eight consecutive days. Her results are shown in the table and scatter plot below.

High Temperature (°F)	Ice Cream Sales (\$)
84	212
72	158
85	160
68	114
76	112
75	136
69	98
93	230



Write an equation to represent the line of best fit for this data. Round to the nearest tenth.

Enter your answer in the space provided.



- 18** The town of Krannert takes a census of its population every 4 years. The data are displayed in the table.

Year	Population
1996	25,480
2000	26,520
2004	27,560
2008	28,600
2012	29,640

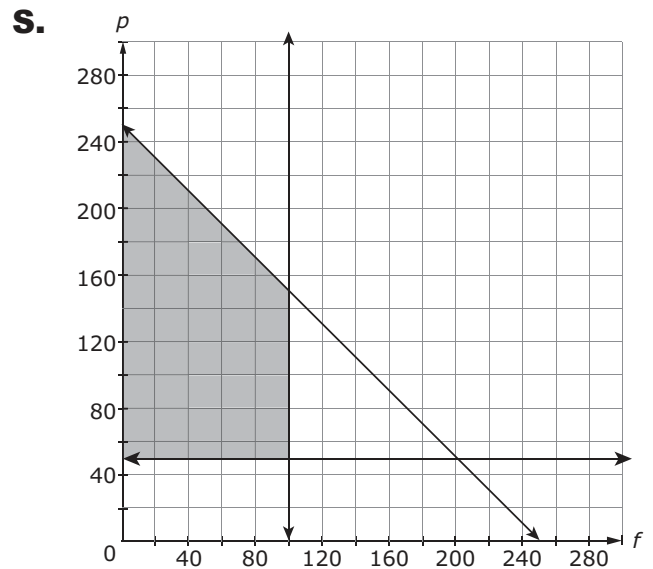
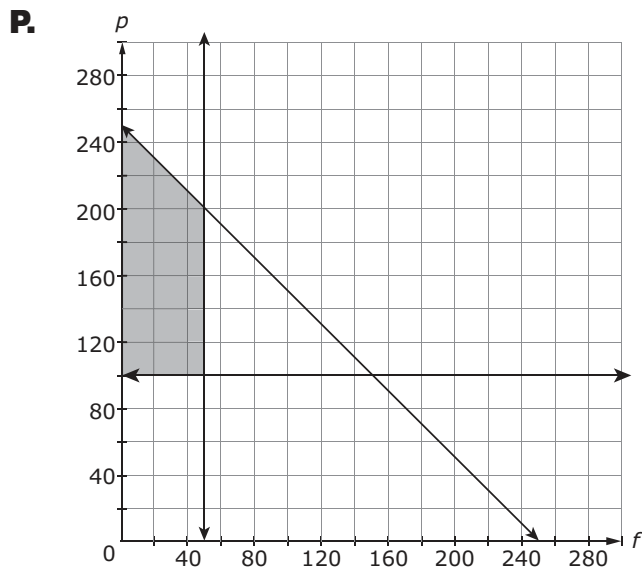
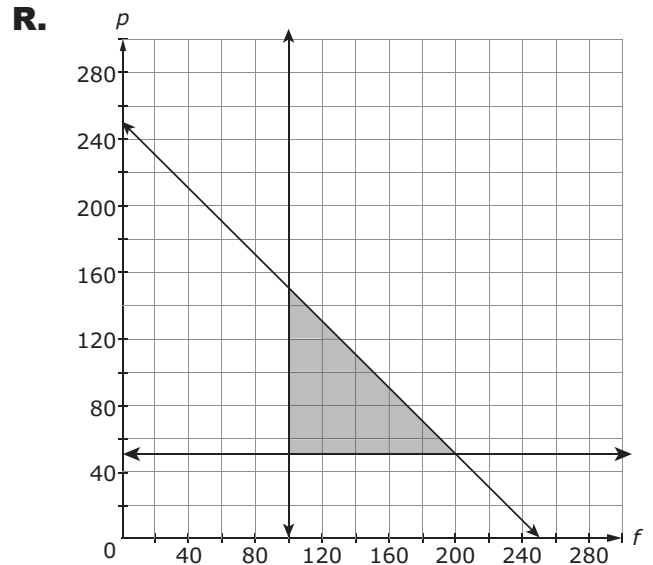
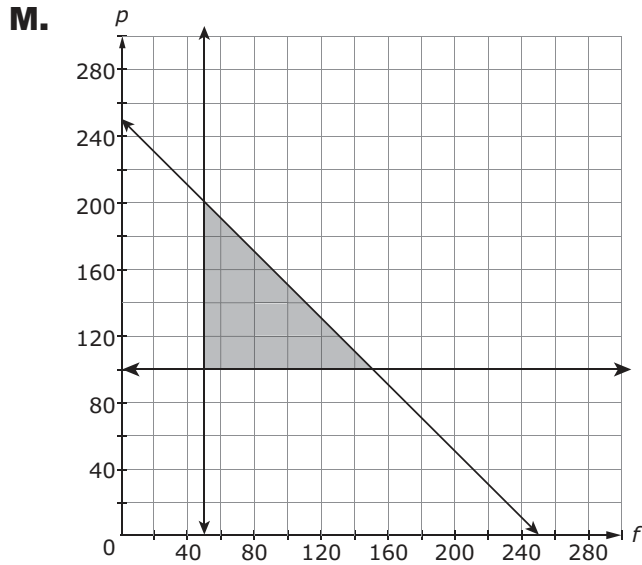
What is the average yearly change in population in Krannert from 1996 to 2012?

- A.** 16
- B.** 260
- C.** 1040
- D.** 4160



- 19** Karen is buying supplies for a party. She plans to spend at least \$100 on food and at least \$50 on party favors. She can spend no more than \$250 total on food and party favors.

Which graph shows the solution set to the amount of money Karen can spend on food, f , and party favors, p , and spend no more than \$250?



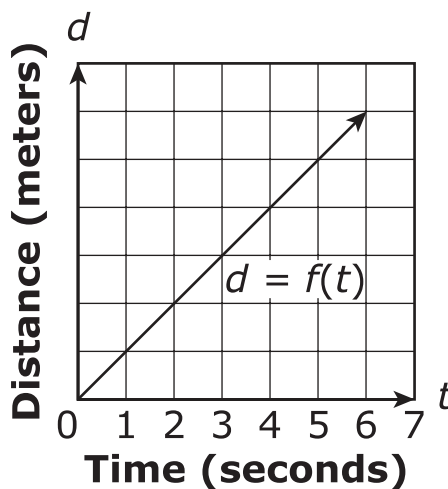


- 20 Harold's car has a fuel tank with 12 gallons of fuel in it. The fuel efficiency of Harold's car is 25 miles per gallon.

Write an equation to represent the amount of fuel remaining, f , in Harold's car after driving m miles.

Write your answer in the space provided.

- 21 The speed of sound at sea level, in dry air (70°F), is approximately 340 meters per second. Assume the graph correctly shows the distance, d , a sound wave created by a loud noise at sea level has traveled after t seconds.



Which set of numbers is **most** appropriate to label the seven tick marks along the vertical axis (distance)?

- A. 1, 2, 3, 4, 5, 6, 7
- B. 70, 140, 210, 280, 350, 420, 490
- C. 100, 200, 300, 400, 500, 600, 700
- D. 340, 680, 1020, 1360, 1700, 2040, 2380



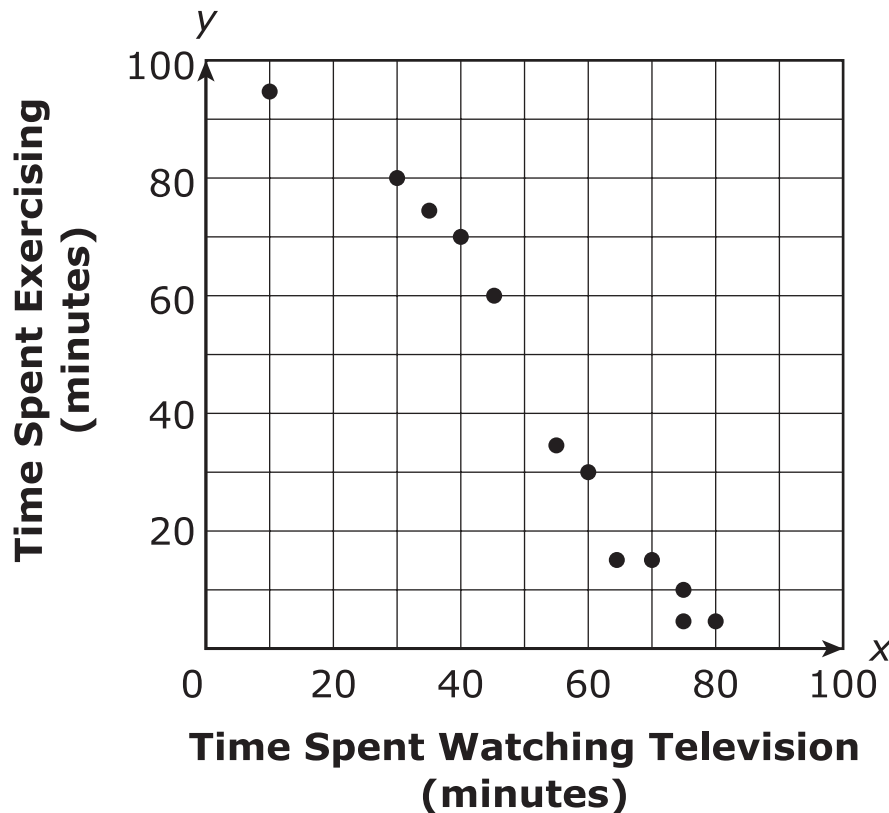
22 A rock is thrown from a cliff into a ravine.

The function $h(t) = -16t^2 + 192t + 2560$ describes the height, in feet, of the rock t seconds after it is thrown.

What is the height of the rock, in feet, 8 seconds after it is thrown?
Enter your answer in the space provided.

23 As part of a class project, Marshall surveyed 12 students at his school to estimate their exercise and television viewing habits. He created the scatter plot shown to compare the estimated number of minutes spent each day watching television and the estimated number of minutes spent each day exercising.

Exercise vs. Television



Item continued on next page.

**23** continued

Marshall models the data with the equation $y = -1.5x + 121$, where x represents the number of minutes spent watching television and y represents the number of minutes spent exercising.

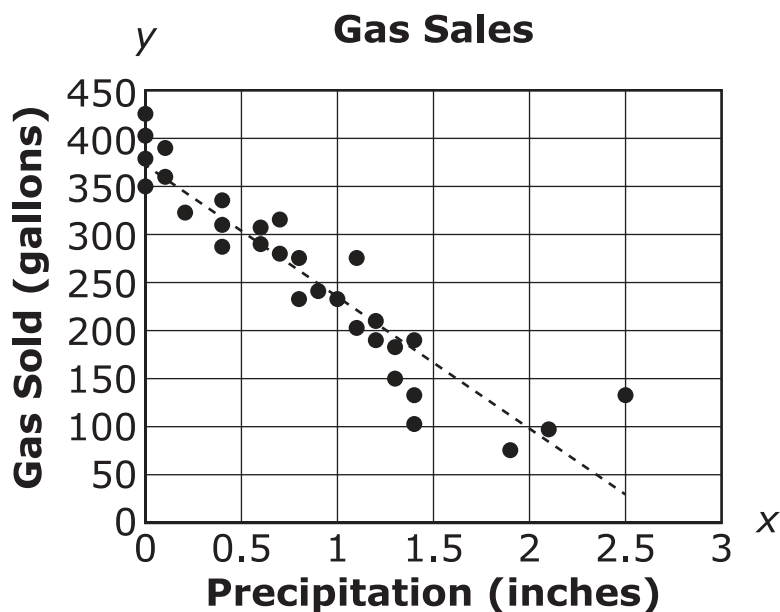
What are the meanings of the slope and the y -intercept for Marshall's model equation?

Select the **two** that apply.

- M.** For every additional minute spent watching television, the number of minutes spent exercising decreases by 1.5.
- P.** For every additional minute spent exercising, the number of minutes spent watching television decreases by 1.5.
- R.** For every additional minute spent exercising, the number of minutes spent watching television increases by 1.5.
- S.** If a student watches no television, the model predicts that the student will exercise for 121 minutes.
- T.** If a student exercises for more than 80 minutes, the model predicts that the student will not watch television.

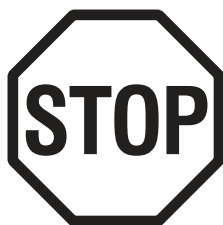


- 24 The owner of a gas station recorded the gallons of gas sold and the amount of precipitation each day for 1 month. The data and the line of best fit are graphed on this scatter plot.



Which value is **closest** to the correlation coefficient for the data?

- A. -0.93
- B. -0.07
- C. 0.07
- D. 0.93



This is the end of the test.

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Name: _____

Subpart 1 Practice Test Questions

- 1. A B C D E (select **all** that apply)
- 2. M P R S
- 3. A B C D
- 4. M P R S
- 5. A B C D
- 6. M P R S
- 7. A B C D

Subpart 2 Practice Test Questions

8.

- 9. A B C D
- 10. M P R S
- 11. **Part A:** A B C D

Part B:

- 12. M P R S
- 13. A B C D E (select **three**)
- 14. M P R S T (select **all** that apply)

15.

16.

Subpart 3 Practice Test Questions

17.

18. A B C D

19. M P R S

20.

21. A B C D

22.

23. M P R S T (select **two**)

24. A B C D



Subpart 1 Practice Test Questions

- 1. ● ● C D ● (select **all** that apply)
- 2. M P ● S
- 3. A B C ●
- 4. ● P R S
- 5. A B ● D
- 6. M P R ●
- 7. A B ● D

Subpart 2 Practice Test Questions

8.

- 9. A B ● D
- 10. M ● R S
- 11. **Part A:** A B C ●

Part B:

- 12. M ● R S
- 13. A ● C ● ● (select **three**)
- 14. M ● R S ● (select **all** that apply)

15

2.2

16.

$$J(t) = 627 (1 + 0.035/4)^{4t} \text{ or } J(t) = 627(1.00875)^{4t} \text{ or equivalent}$$

Subpart 3 Practice Test Questions

17.

$y = 4.7x - 214.3$ (accept ± 0.1 on m and b values) and accept alternate variables (like s and t for sales and temperatures).

18.

 A B C D

19.

 M P R S

20.

$$f = 12 - m/25$$

21.

 A B C D

22.

3072

23.

 A B C D E (select **two**)

24.

 A B C D

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TNReady Practice Test Standards Alignment and Key – Integrated Math I

Subpart 1	Key	Standard
1	A, B, E	M1.F.IF.A.1
2	R	M1.A.CED.A.2
3	D	M1.S.ID.A.2
4	M	M1.A.SSE.B.2a
5	C	M1.A.SSE.A.1a
6	S	M1.G.CO.B.6
7	C	A1.SI.D.C.7
Subpart 2		
8	96	M1.F.IF.A.2
9	C	M1.A.REI.A.1
10	P	M1.F.LE.B.4
11	D; 3.25	M1.A.REI.B.2
12	P	M1.F.BF.A.1a
13	B, D, E	M1.S.ID.A.3
14	P, T	M1.A.REI.C.4
15	2.2	M1.A.CED.A.1
16	$J(t) = 627(1 + 0.035/4)^{4t}$ or $J(t) = 627(1.00875)^{4t}$ or equivalent	M1.F.LE.A.2
Subpart 3		
17	$y = 4.7x - 214.3$ (accept ± 0.1 on m and b values) and accept alternate variables (like s and t for sales and temperatures).	M1.S.ID.B.4b
18	B	M1.F.IF.B.5
19	R	M1.A.CED.A.3
20	$f = 12 - m/25$	M1.A.CED.A.2
21	D	M1.N.Q.A.1
22	3072	M1.F.IF.A.2
23	M, S	M1.S.ID.C.5
24	A	M1.S.ID.C.6

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