

Tennessee Comprehensive Assessment Program TCAP

TNReady—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.



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TNReady Math Reference Sheet—High School

<p>1 inch = 2.54 centimeters 1 mile = 5280 feet 1 mile = 1760 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 = 2000 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 = 1000 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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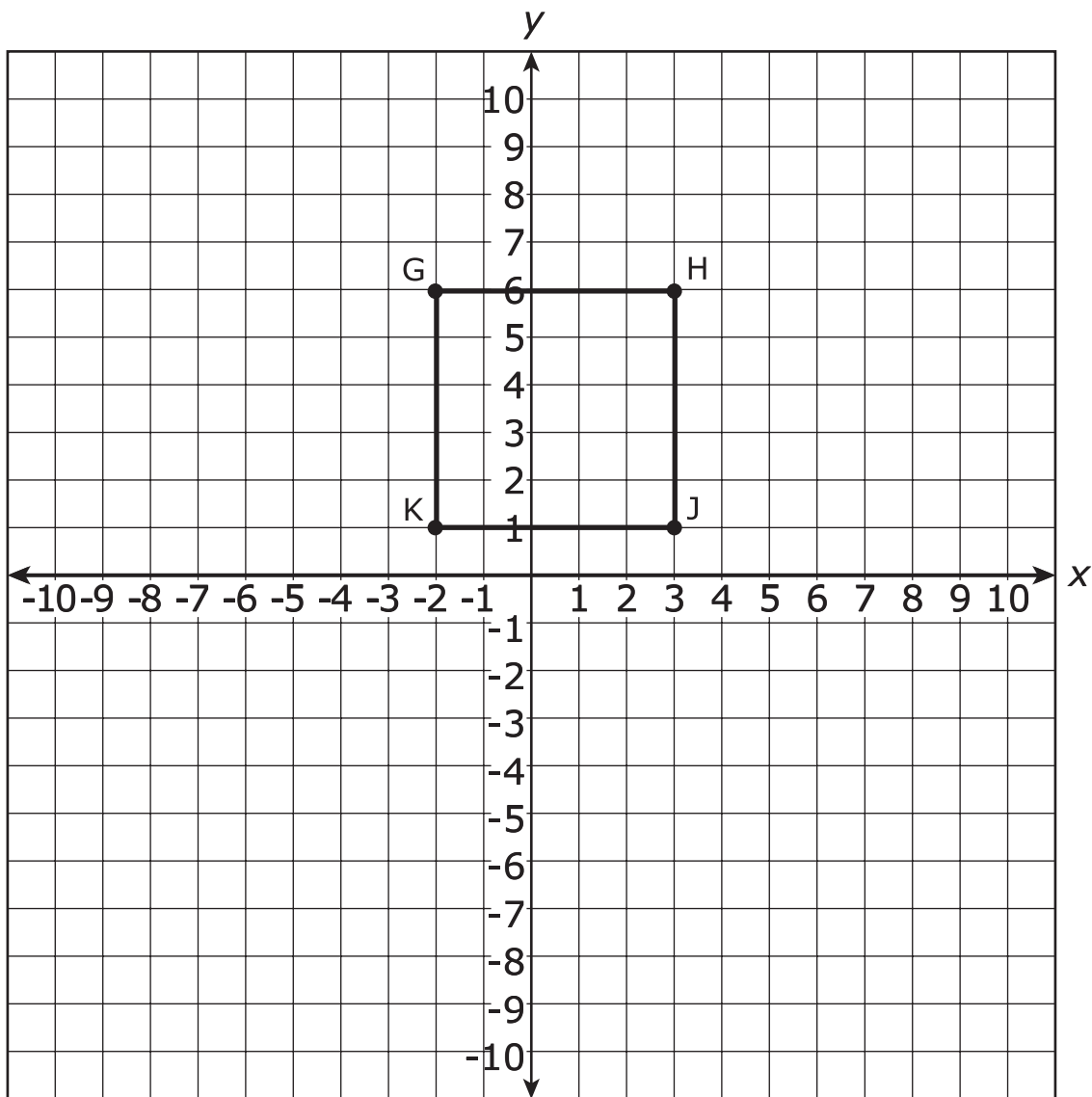
Directions

This test has Subpart 1, Subpart 2, and Subpart 3. Each subpart contains various types of assessment questions. The following samples show the types of questions used.

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

Sample: Graphing response

Rectangle $GHJK$ is shown.

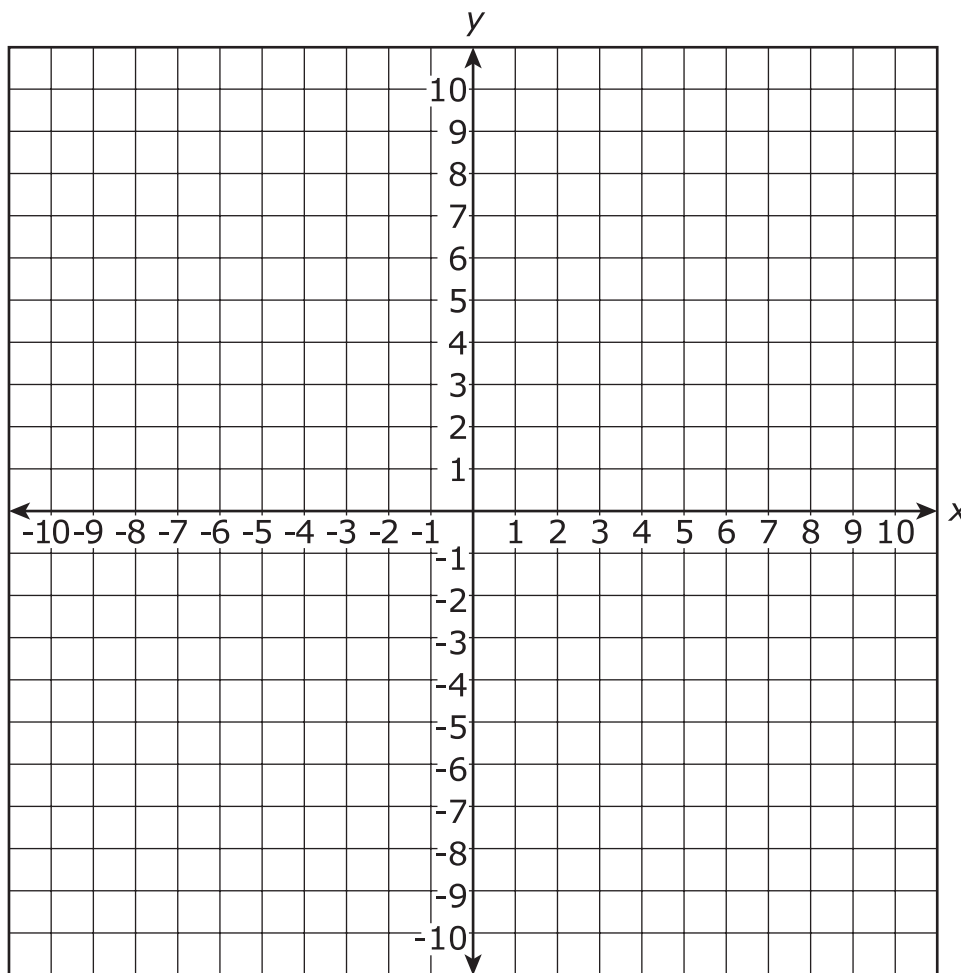


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continued

The rectangle is reflected across the x -axis.

Graph the image $G'H'J'K'$ on the coordinate plane.



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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.

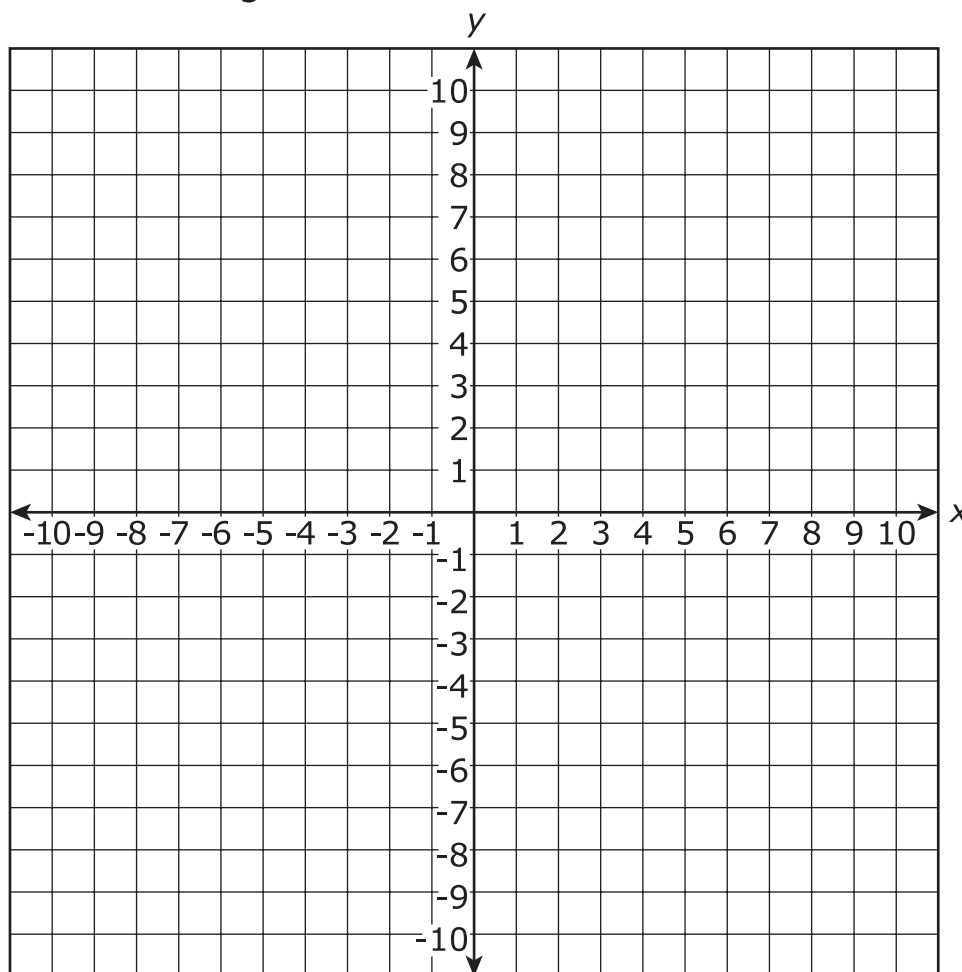
M. $10m + 25b = 400$

P. $10m - 25b = 400$

R. $25m + 10b = 400$

S. $25m - 10b = 400$

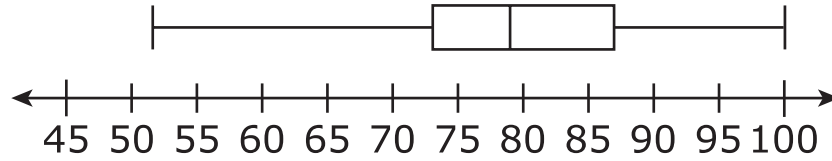
- 3 Graph the function $f(x) = \frac{2}{3}x + 4$.



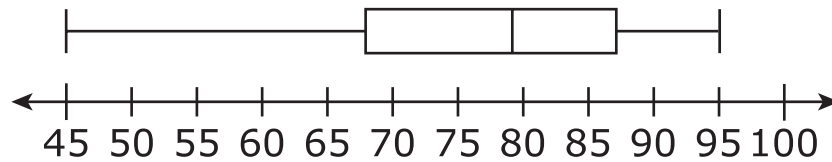


- 4 Two of Ms. Cole's Earth science classes have 23 students each. Box plots for recent test scores for these two classes are displayed.

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.



- 5 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. $p(t) = 2(8^t)$

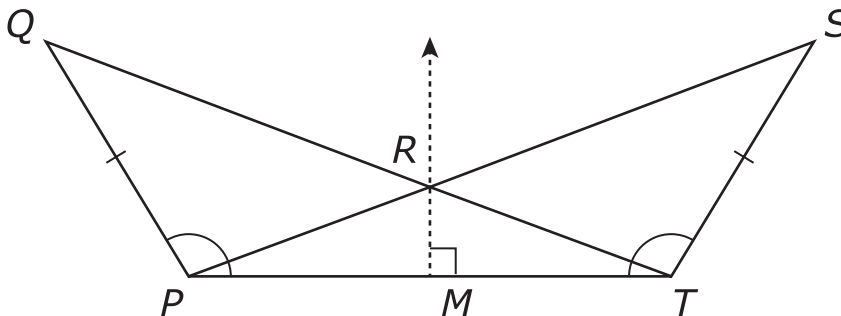
- 6 The balance of an account after t years can be found using the expression $6000(1.02)^t$ where the initial balance was \$6000.

By what percent does the account increase annually?

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



- 7 The triangles QTP and SPT are shown. Ray RM 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}
- 8 Triangle 1 is transformed to create Triangle 2 such that sides \overline{RS} , \overline{RT} , and \overline{ST} are congruent to sides \overline{VW} , \overline{VU} , and \overline{WU} , respectively.

Select the answers that correctly complete the following statement.

$\triangle RST$ must be congruent to $\triangle VWU$ because of the
 ASA
 SSS
 SAS
 AAS
 theorem. Thus,

$\angle STR$ must be congruent to \angle
 UVW
 VWU
 WUV
 .



- 9 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

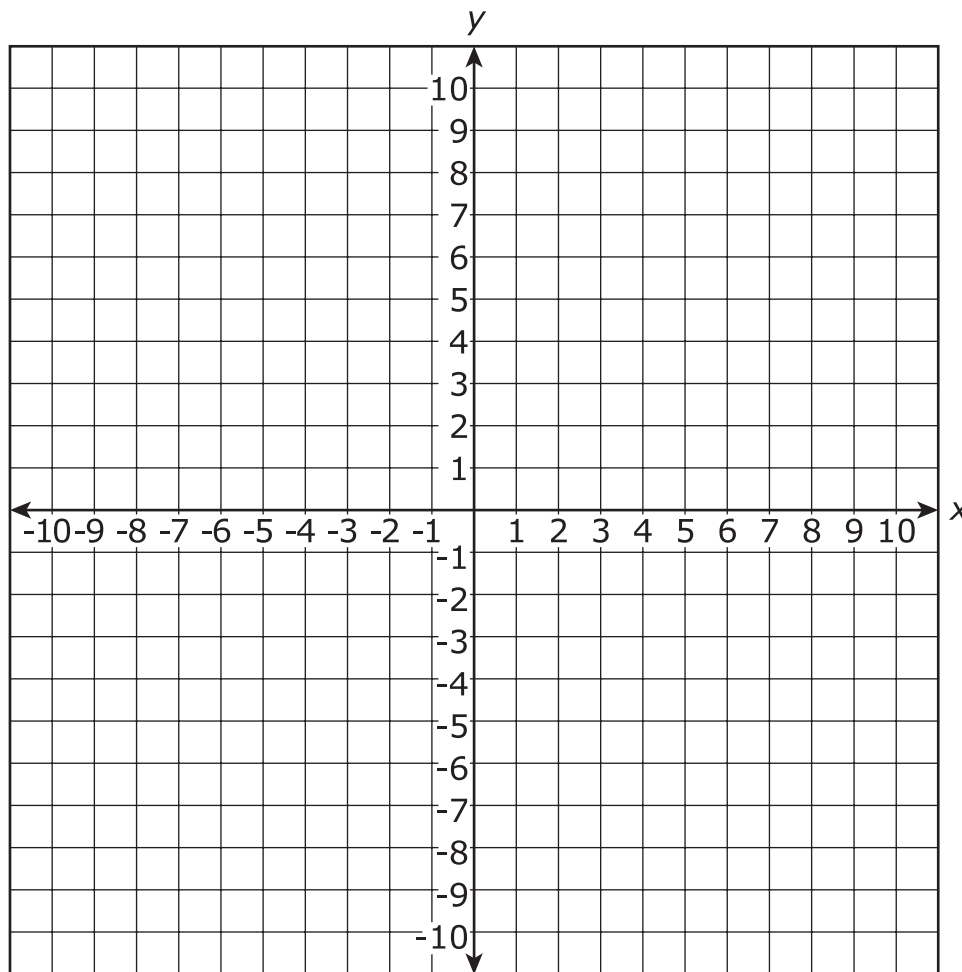


10 Two functions are shown.

$$f(x) = \frac{3}{2}x + 5$$

$$g(x) = 5x - 2$$

Determine the solution of the equation $f(x) = g(x)$. Plot the functions, $f(x)$ and $g(x)$, on the coordinate plane. Then, plot the point or points that show the solution of the equation $f(x) = g(x)$ on the coordinate plane.



**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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Directions

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

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

Sample: Written response (fill in the blank)

The length of a garden is 6 feet more than the width. The area is 40 square feet.

1. Write an algebraic equation to determine the length and width of the garden.
2. What is the length, in feet, of the garden?

Enter your answers in the spaces provided.

1.

2.



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- 11** 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.

- 12** 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. $x \leq \frac{3}{2}$



- 13** 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



- 14** 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 at the restaurant?

Enter your answer in the space provided.



- 15** 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. $y = \frac{4}{x}$

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

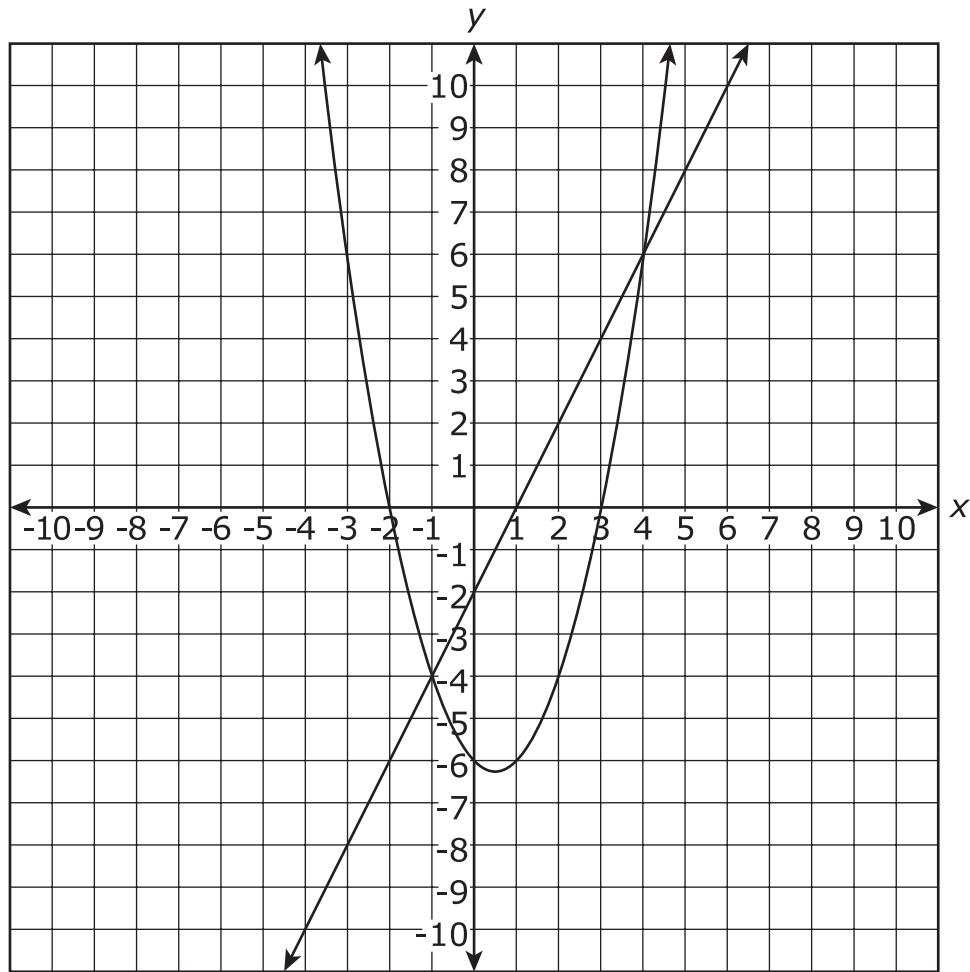
54	58	59	62	62
62	63	64	65	65
65	66	67	69	70
70	70	71	72	72

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



- 17 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. 0
- S. 1
- T. 3
- V. 4



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

Part A

Write an inequality to represent the average distance, d , in miles, John must ride each day for the rest of the summer to achieve his goal.

Enter your inequality in the space provided.

Part B

Determine the average number of miles John must ride each day to reach **exactly** 100 miles.

Enter your answer in the space provided.

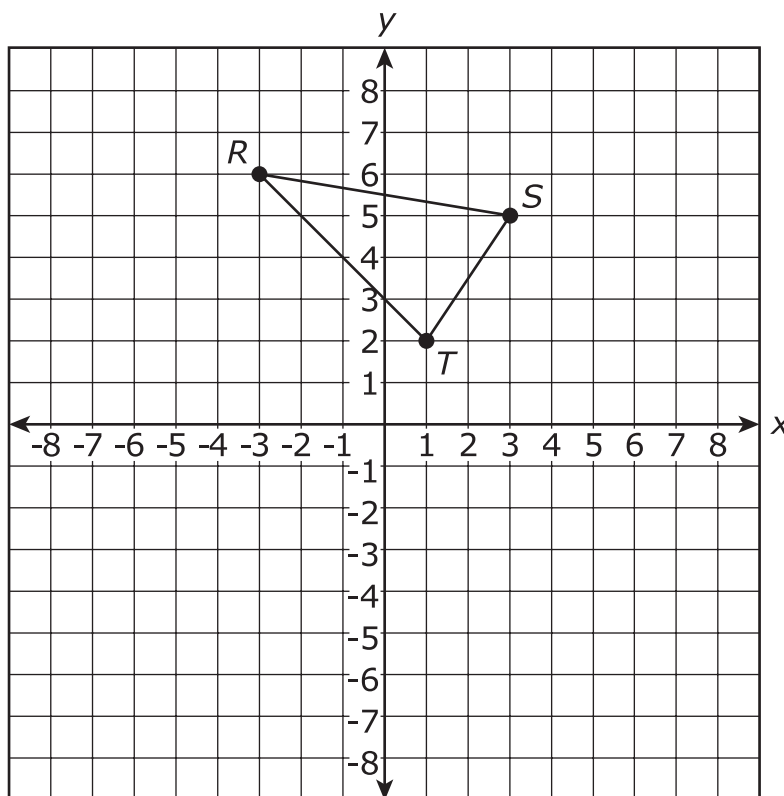


- 19** Jamie deposits \$627 into a savings account. The account has an interest rate of 3.5%, compounded quarterly.

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.

- 20** $\triangle RST$ is shown on a coordinate plane.

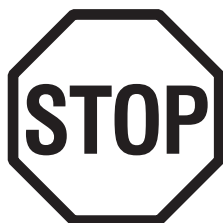
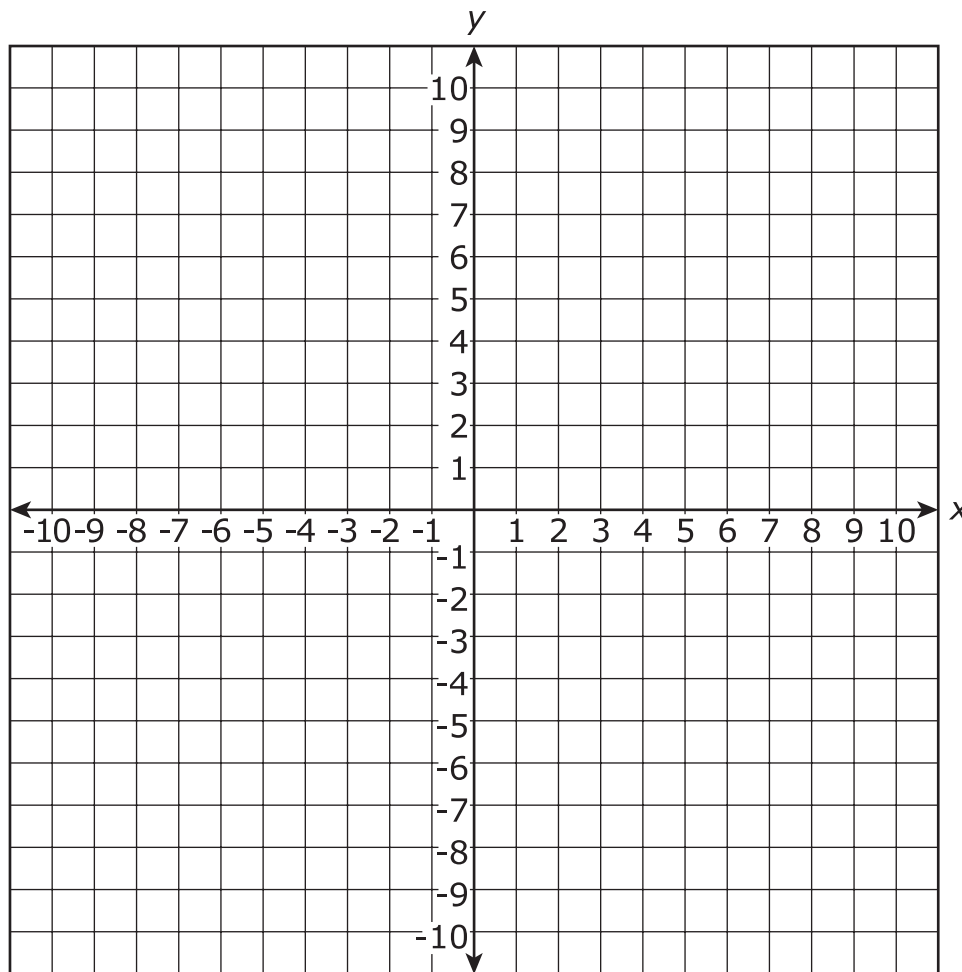


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20 continued

Create the final image of $\triangle RST$ after reflecting first over the x -axis and then over the y -axis on the coordinate plane 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.

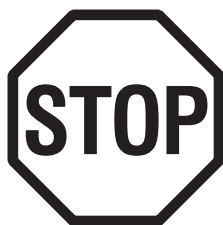
You MAY use a calculator in Subpart 3 of this test.

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.** $(1, 6)$



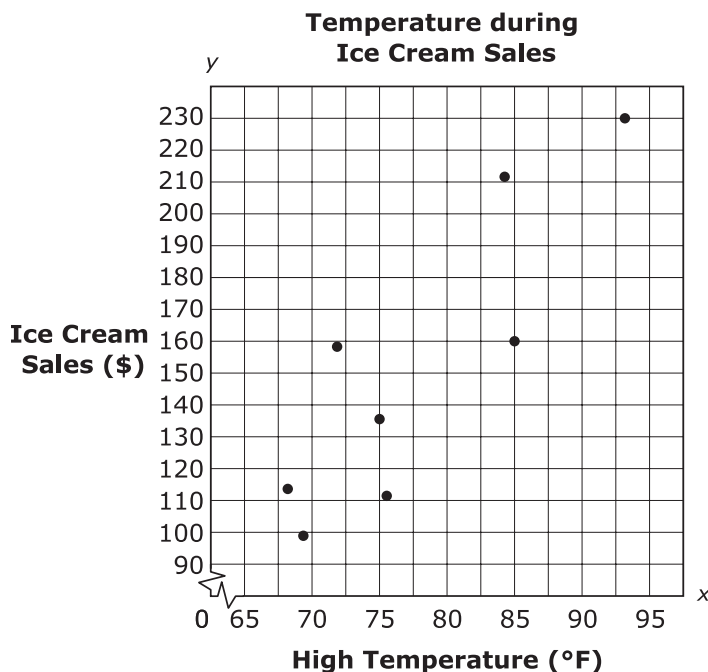
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- 21 Samatha owns a local ice cream stand. She recorded the high temperatures, in degrees Fahrenheit, and her ice cream sales, in dollars, for eight consecutive days. Her results are shown in the table and scatter plot below.

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.



- 22** 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

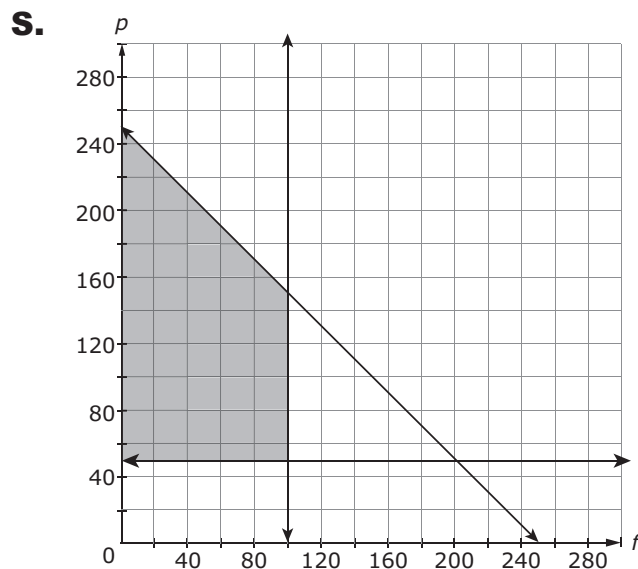
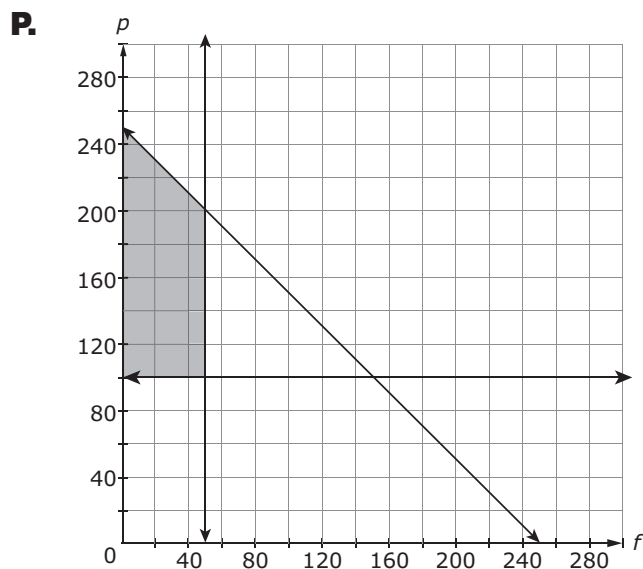
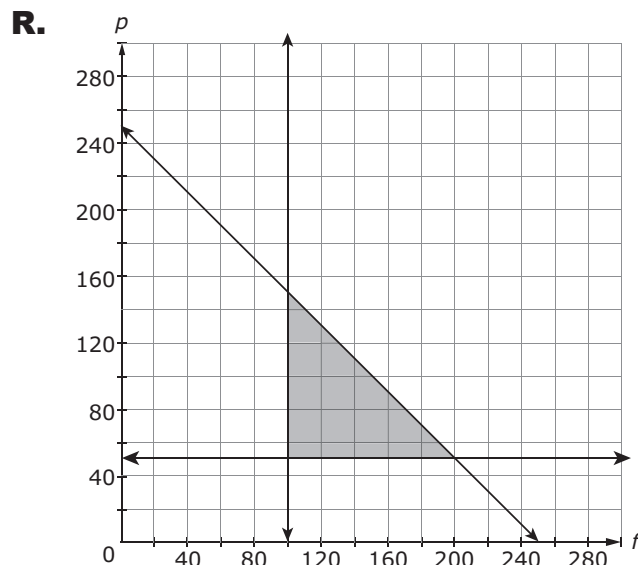
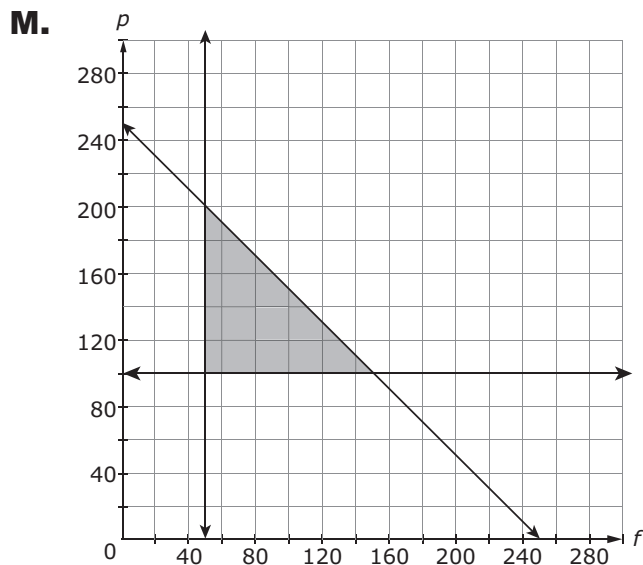
What is the average yearly change in population in Krannert from 1996 to 2012?

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



- 23** 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?

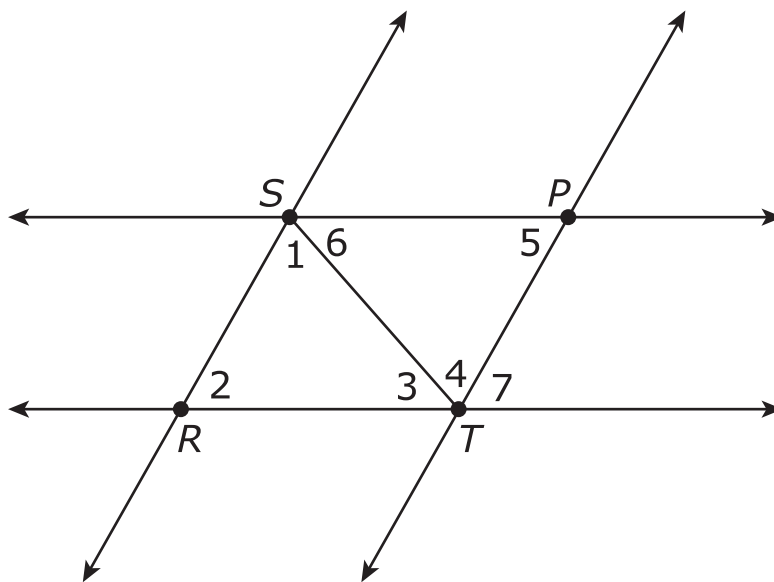




24 Part of a proof is shown.

Given: $\triangle RST \cong \triangle PTS$, $\overleftrightarrow{SP} \parallel \overleftrightarrow{RT}$, and $\overleftrightarrow{SR} \parallel \overleftrightarrow{PT}$

Prove: The sum of the measures of the interior angles of $\triangle RST$ is 180° .



Statement	Reason
1. $\triangle RST \cong \triangle PTS$	1. Given
2. $\angle 1 \cong \angle 4$	2.
3. $\angle 7 \cong \angle 2$	3.
4. $m\angle 4 + m\angle 7 + m\angle 3 = 180^\circ$	4. Angles 3, 4, and 7 form a line.
5. $m\angle 1 + m\angle 2 + m\angle 3 = 180^\circ$	5.

Item continued on next page.

**24** continued

Review each statement of the proof. Then select a reason that correctly supports each statement in lines 2, 3, and 5 to complete the proof.

The reason for statement 2 is

- Substitution
- Vertical angles are congruent.
- Alternate interior angles are congruent.

The reason for statement 3 is

- Substitution
- Corresponding angles are congruent.
- Alternate interior angles are congruent.

The reason for statement 5 is

- Substitution
- Corresponding angles are congruent.
- Alternate interior angles are congruent.

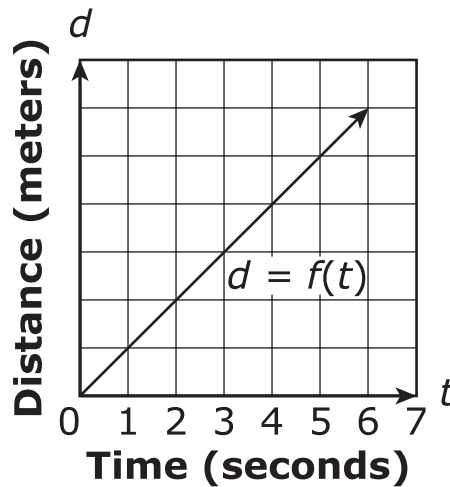
25 Harold's car has a fuel tank with 12 gallons of fuel in it. The fuel efficiency of Harold's car is 25 miles per gallon.

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.



- 26** 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

- 27** A rock is thrown from a cliff into a ravine.

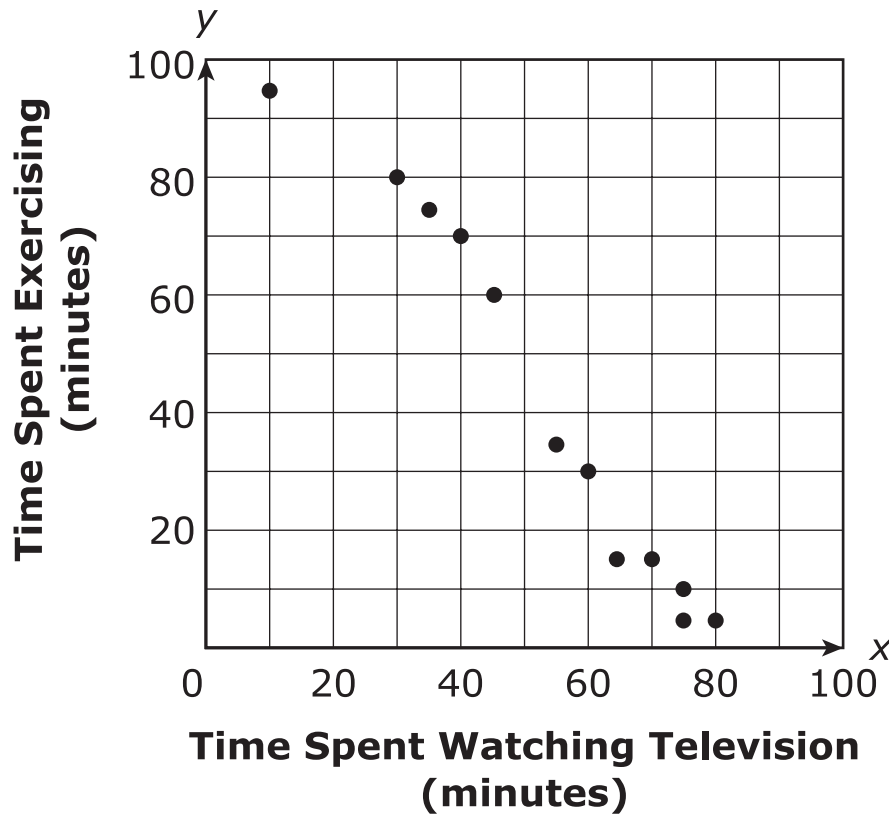
The function $h(t) = -16t^2 + 192t + 2560$ describes the height, in feet, of the rock t seconds after it is thrown.

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



- 28** 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



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.

Item continued on next page.

**28** continued**Part A**

Marshall computed a correlation coefficient of -0.98 for the data. What does the coefficient mean in terms of the data he collected?

- M.** Because -0.98 is negative, there is no correlation between the variables.
- P.** Because -0.98 is negative, the correlation between the variables is weak.
- R.** Because $|-0.98|$ is close to 1, there is a strong correlation between the variables.
- S.** Because $|-0.98|$ is close to 1, there is a positive correlation between the variables.

Part B

A certain student watches television for an average of 38 minutes per night. Based on Marshall's model equation, how many minutes will that student spend exercising?

Enter your answer in the space provided.

Item continued on next page.

**28** continued**Part C**

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

Select the **two** that apply.

- A.** For every additional minute spent watching television, the number of minutes spent exercising decreases by 1.5.
- B.** For every additional minute spent exercising, the number of minutes spent watching television decreases by 1.5.
- C.** For every additional minute spent exercising, the number of minutes spent watching television increases by 1.5.
- D.** If a student watches no television, the model predicts that the student will exercise for 121 minutes.
- E.** If a student exercises for more than 80 minutes, the model predicts that the student will not watch television.

Item continued on next page.

**28** continued**Part D**

Using the information from the survey and Marshall's model, which statement is **most** accurate?

- M.** A student who does not watch television must exercise more than 100 minutes each day.
- P.** A student who does not exercise must watch television more than 100 minutes each day.
- R.** A student who watches more television is more likely to exercise.
- S.** A student who watches more television is less likely to exercise.

Part E

What is $y = -1.5x + 121$ rewritten as a recursive formula, where n represents the number of minutes spent watching television and a_n represents the number of minutes spent exercising?

- A.** $a_0 = 1.5; a_n = a_{n-1} - 121$
- B.** $a_0 = 1.5; a_n = a_{n-1} + 121$
- C.** $a_0 = 121; a_n = a_{n-1} - 1.5$
- D.** $a_0 = 121; a_n = a_{n-1} + 1.5$

Item continued on next page.

**28** continued**Part F**

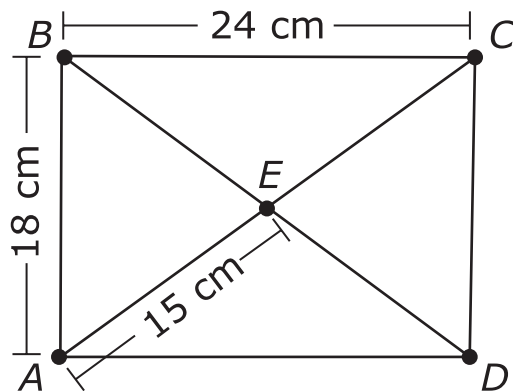
Marshall surveyed another set of 12 students and recorded the results in the table shown.

Time Spent Watching Television (minutes)	Time Spent Exercising (minutes)
0	92
15	74
20	69
25	64
30	58
30	63
40	50
45	43
50	41
60	33
60	29
75	14

Based on these results, what is the average rate at which exercise time is reduced for students who watch between 25 and 60 minutes of television?



29 Rectangle $ABCD$ is shown.



1. The measure of diagonal BD is

- 15
- 18
- 24
- 30

cm.

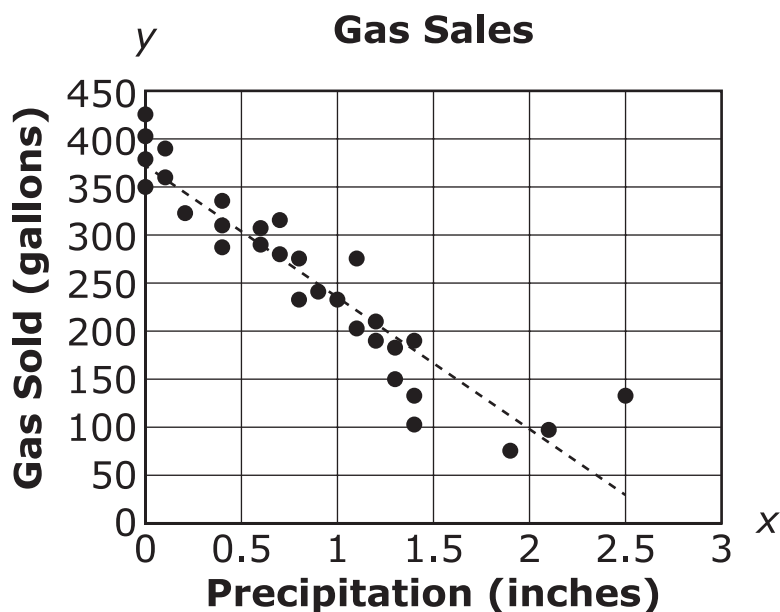
2. The perimeter of triangle CDE is

- 33
- 48
- 54
- 57

cm.



- 30** 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?

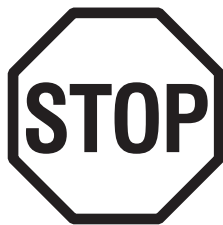
- M.** -0.93
- P.** -0.07
- R.** 0.07
- S.** 0.93



- 31 The expression $89,000(0.995)^t$ represents the population of a town t years after 1990.

Select the **best** choices to complete the sentence below.

The population of the town increases
 decreases by 0.5%
 0.995%
 5%
 99.5%
 995% each year.



This is the end of the test.

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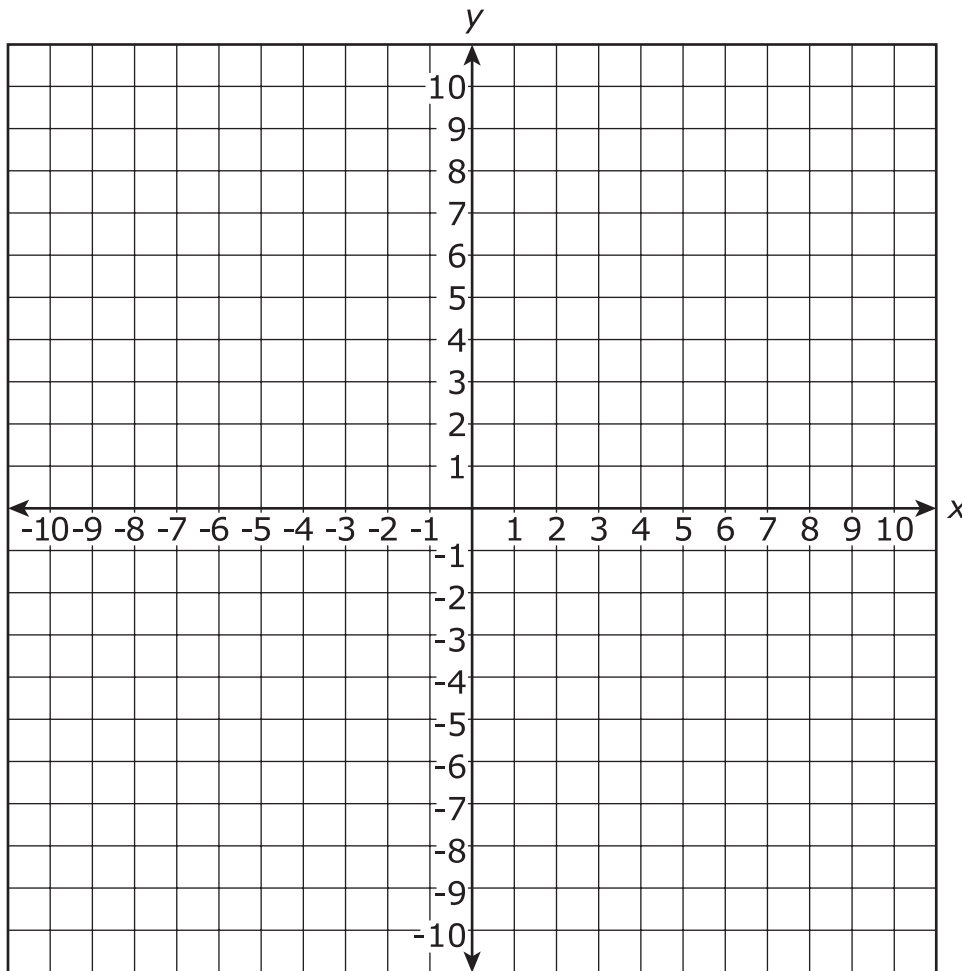
Name: _____

Subpart 1 Practice Test Questions

1. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ (select **all** that apply)

2. Ⓜ Ⓟ Ⓡ Ⓢ

3.



4. Ⓐ Ⓑ Ⓒ Ⓓ

5. Ⓜ Ⓟ Ⓡ Ⓢ

6. Ⓐ Ⓑ Ⓒ Ⓓ

7. Ⓜ Ⓟ Ⓡ Ⓢ

8.

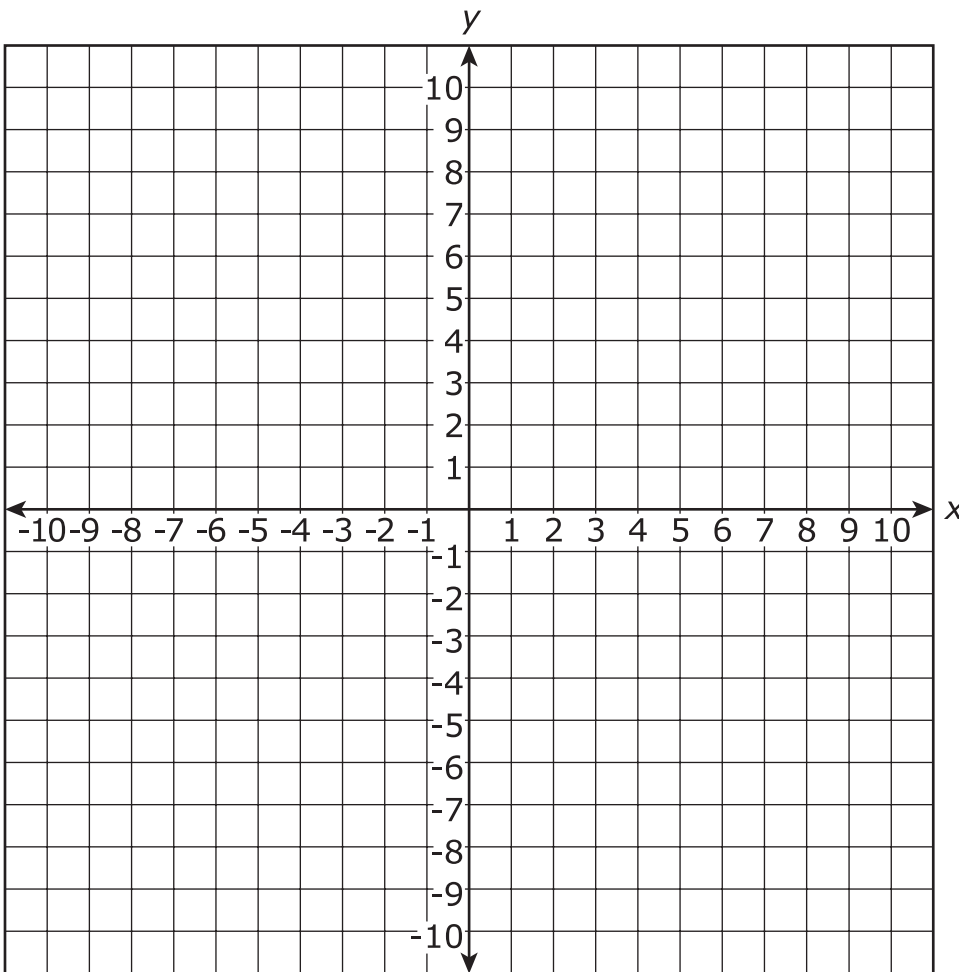
- ASA
- SSS
- SAS
- AAS

- UVW
- VWU
- WUV

9.

- A
- B
- C
- D

10.



Subpart 2 Practice Test Questions

11.

12. A B C D

13. M P R S

14. **Part A:** A B C D

Part B:

15. M P R S

16. A B C D E (select **three**)

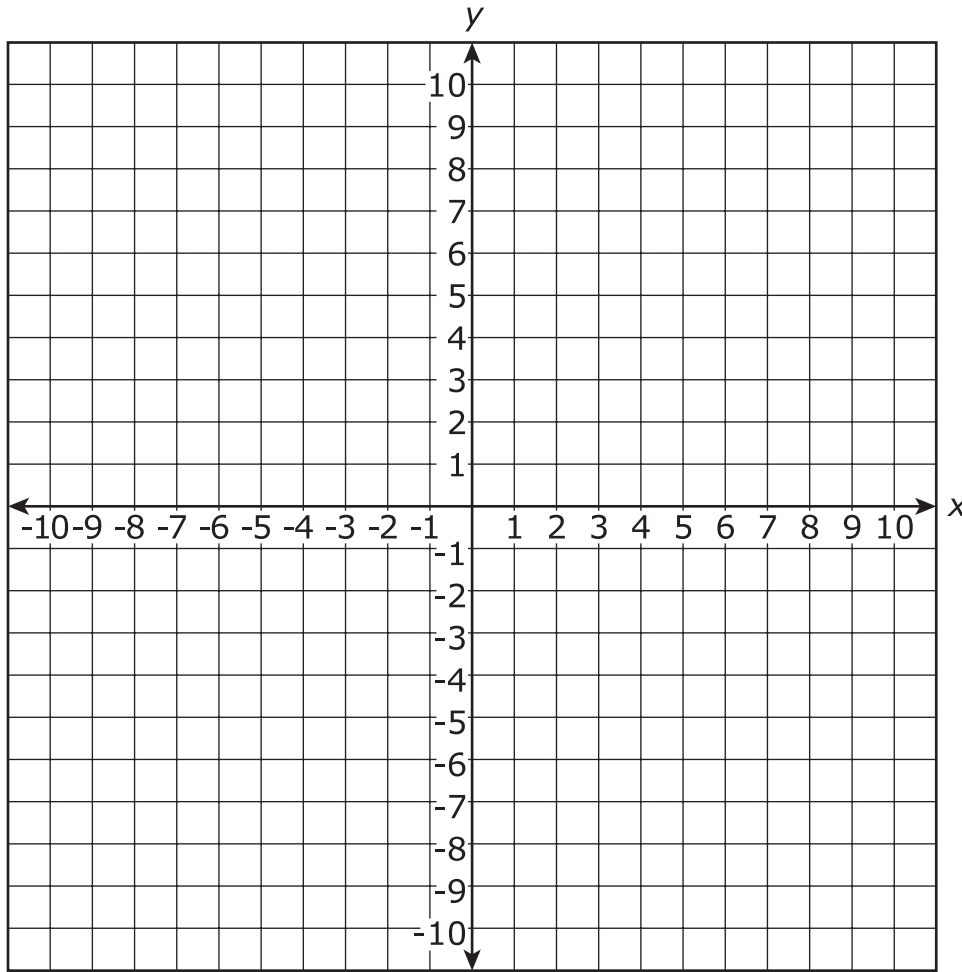
17. M P R S T V (select **all** that apply)

18. **Part A:**

Part B:

19.

20.



Subpart 3 Practice Test Questions

21.

22. (A) (B) (C) (D)

23. (M) (P) (R) (S)

24. Substitution
 Vertical angles are congruent.
 Alternate interior angles are congruent.

- Substitution
 Corresponding angles are congruent.
 Alternate interior angles are congruent.

- Substitution
 Corresponding angles are congruent.
 Alternate interior angles are congruent.

25.

26. A B C D

27.

28. **Part A:** M P R S

Part B:

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

Part D: M P R S

Part E: A B C D

Part F:

29.

15

18

24

30

33

48

54

57

30.

M

P

R

S

31.

increases

decreases

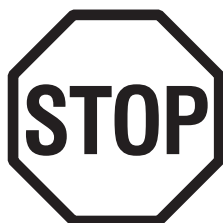
0.5%

0.995%

5%

99.5%

995%

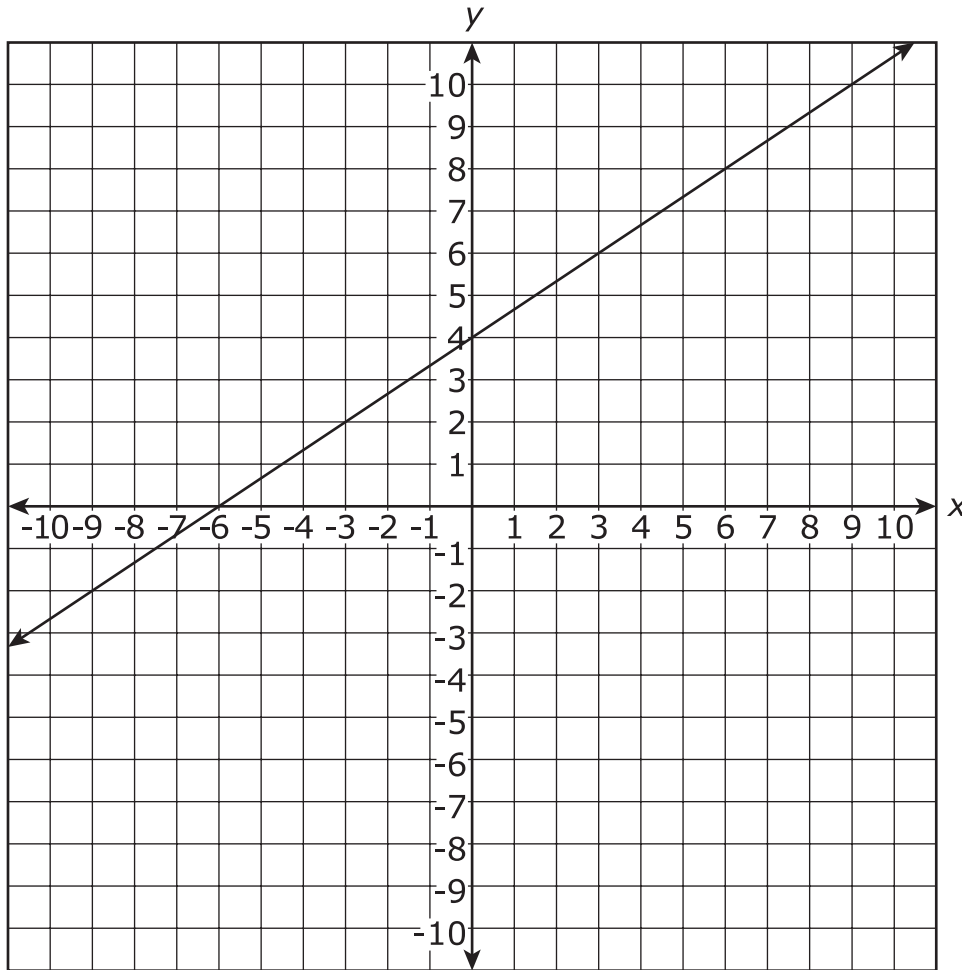


Subpart 1 Practice Test Questions

1. C D (select **all** that apply)

2. M P S

3.



4. A B C

5. P R S

6. A B D

7. M P R

8.

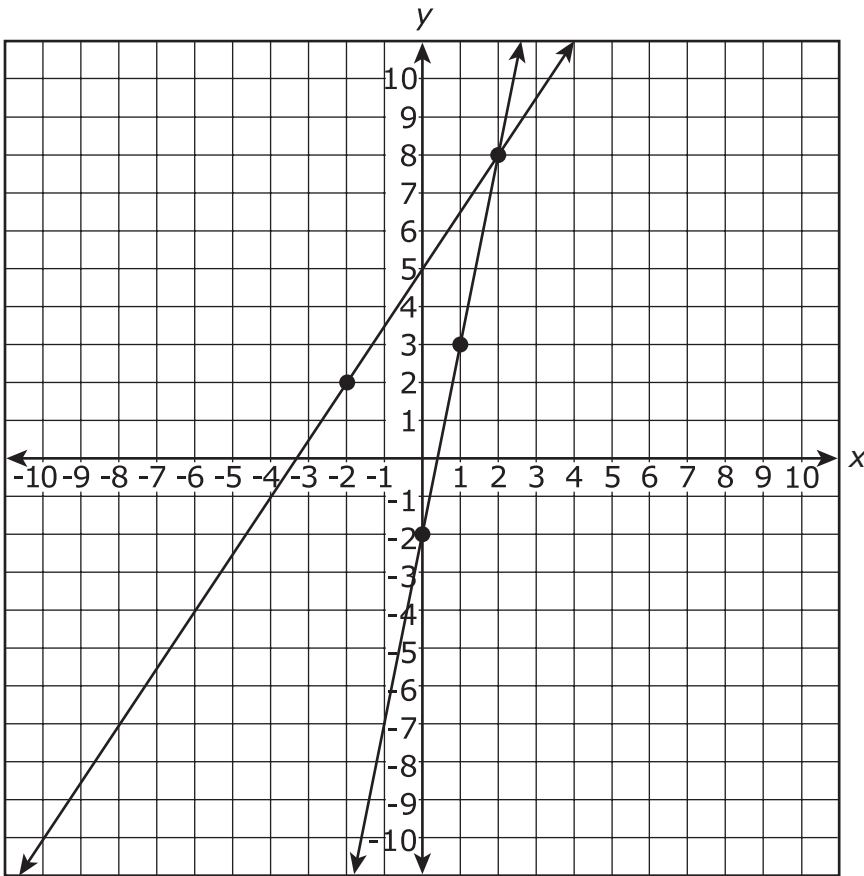
- ASA
- SSS
- SAS
- AAS

- UVW
- VWU
- WUV

9.

- A
- B
- C
- D

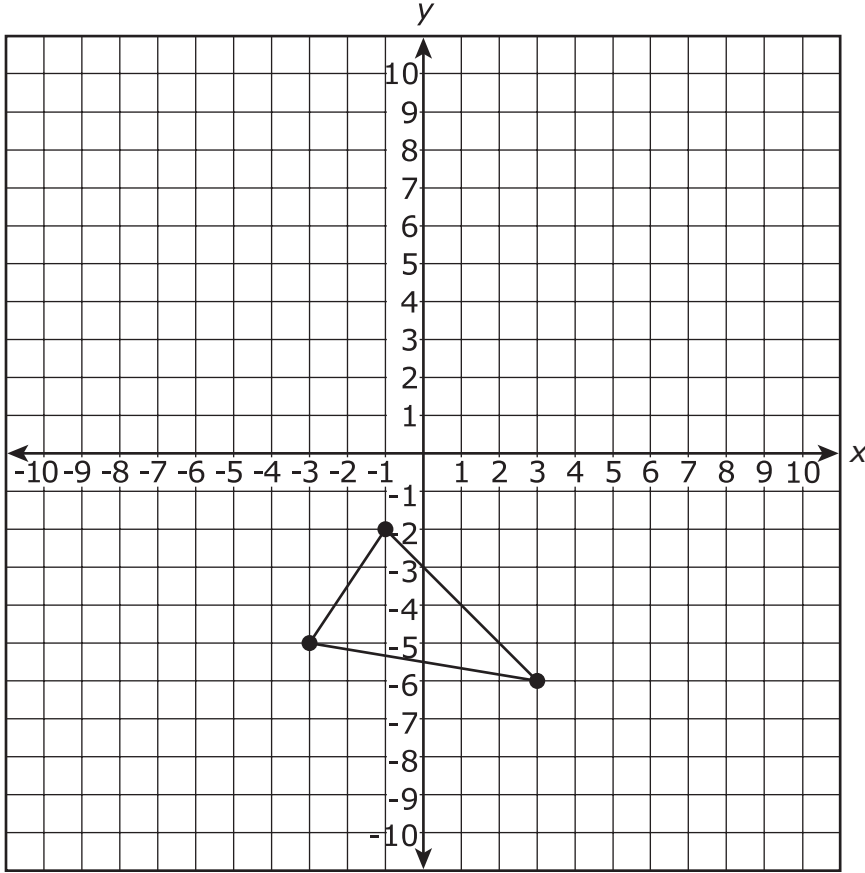
10.



Subpart 2 Practice Test Questions

11.
12. A B C D
13. M P R S
14. **Part A:** A B C D
- Part B:**
15. M P R S
16. A B C D E (select **three**)
17. M P R S T U (select **all** that apply)
18. **Part A:**
- Part B:**
19.

20.



Subpart 3 Practice Test Questions

21.

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

22. A B C D

23. M P R S

24. Substitution
 Vertical angles are congruent.
 Alternate interior angles are congruent.

- Substitution
 Corresponding angles are congruent.
 Alternate interior angles are congruent.

- Substitution
 Corresponding angles are congruent.
 Alternate interior angles are congruent.

25. $f = 12 - m/25$

26. A B C

27. 3072

28. Part A: M P S

Part B: 64

- Part C: B C E (select two)

- Part D: M P R

- Part E: A B D

Part F: -0.89 or -1

29.

15

18

24

30

33

48

54

57

30.

P

R

S

31.

increases

decreases

0.5%

0.995%

5%

99.5%

995%

**No test material
on this page**

**TNReady Practice Test Standards Alignment and Key – Integrated Math I
(2017–2018)**

Subpart 1	Key	Standard
1	A, B, E	M1.F.IF.A.1
2	R or C	M1.A.CED.A.2
3	Graph of $f(x) = \frac{2}{3}x + 4$	M1.F.IF.C.6a
4	D	M1.S.ID.A.2
5	M or A	M1.A.SSE.B.2a
6	C	M1.A.SSE.A.1a
7	S or D	M1.G.CO.B.6
8	SSS; WUV	M1.G.CO.B.8
9	C	A1.SI.D.C.7
10	Graphs of $f(x) = \frac{3}{2}x + 5$ and $g(x) = 5x - 2$ and point (2, 8)	M1.A.REI.C.4
Subpart 2		
11	96	M1.F.IF.A.2
12	C	M1.A.REI.A.1
13	P or B	M1.F.LE.B.4
14	D; 3.25	M1.A.REI.B.2
15	P or B	M1.F.BF.A.1a
16	B, D, E	M1.S.ID.A.3
17	P, V or B, F	M1.A.REI.C.4
18	$12 + 40d \geq 100$ or equivalent; 2.2	M1.A.CED.A.1
19	$J(t) = 627(1 + 0.035/4)^{4t}$ or $J(t) = 627(1.00875)^{4t}$ or equivalent	M1.F.LE.A.2
20	Graph of triangle with vertices $(-1, -2)$, $(-3, -5)$, and $(3, -6)$	M1.G.CO.A.5
Subpart 3		
21	$y = 4.7x - 214.3$ (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
22	B	M1.F.IF.B.5
23	R or C	M1.A.CED.A.3
24	Alternate interior angles are congruent.; Corresponding angles are congruent.; Substitution	M1.CO.C.10
25	$f = 12 - m/25$	M1.A.CED.A.2
26	D	M1.N.Q.A.1
27	3072	M1.F.IF.A.2
28a	R or C	M1.S.ID.C.6
28b	64	M1.S.ID.B.4a
28c	A, D	M1.S.ID.C.5
28d	S or D	M1.S.ID.C.7
28e	C	M1.F.BF.A.1a
28f	-0.89 or -1	M1.F.IF.B.5
29	30; 48	M1.G.CO.C.11
30	M or A	M1.S.ID.C.6
31	decreases; 0.5%	M1.A.SSE.A.1b

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Tennessee Comprehensive
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TNReady—Integrated Math I
Practice Test

