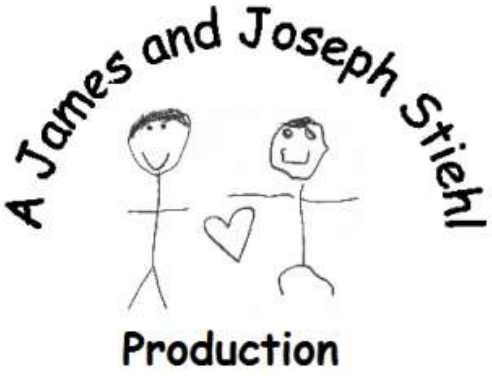
JD's REGENTS PREPARATION, LLC.

-Presents-

TSIA Math Preparation Manual

Texas Success Initiative Assessment

WITH OVER 550 PRACTICE QUESTIONS



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JD's Regents Preparation has produced exam review material since 2003 and has recently created a new study guide for the Texas Success Initiative Assessment. JD's TSIA Exam Review Manual boasts over 550 practice exam questions. Like all JD's Prep's products, the questions are organized by topic, and diagnostic exams are located in the front and back of the book. This review manual is great as a standalone review for the TSIA exam, or it can be used as a supplement in addition to the official Accuplacer® review material. The added value is not only the topically organized questions, but there is video assistance given to every question. The book can also be used throughout the school year as the instructor teaches new material.
MOST IMPORTANTLY, EVERY QUESTION IS LINKED TO A SOLUTION VIDEO!
The QR Code can be read by any I-Pad, Cell Phone, Google Chrome book, or virtually any technology that has a camera. This is ideal for independent study.

This book allows students to do the following: target topics that they are having difficulties with, study on their own, and verify process and procedure via video instruction. After completing the initial diagnostic test, a student may choose the category needing additional practice on by marking the missed questions and aligning them with the categories and subtopics throughout the book.

The mathematics component of TSIA2 consists of two tests: The College Readiness Classification (CRC) Test and the Diagnostic Test. The College Readiness Classification (CRC) Test consists of 20 multiple choice questions in the following 4 content areas: Quantitative Reasoning (approx. 6 questions), Algebraic Reasoning (approx. 7 questions), Geometric and Spatial Reasoning (approx. 3 questions) and Probabilistic and Statistical Reasoning (approx. 4 questions). When the students' CRC test score does not meet the 950 standard, additional questions, 48 total questions (12 from each category) are given to identify specific strengths and weaknesses in mathematical skills to guide placement and instruction.

The content areas include:

Geometric and Spatial Reasoning-geometric concepts such as area, perimeter, and triangle properties

Quantitative Reasoning-Calculating ratios, proportions, percents, identifying, manipulating, and interpreting linear equations and expressions.

Algebraic Reasoning-linear equations, inequalities, and functions.

Probabilistic and Statistical Reasoning-probability and data analysis.

Texas Success Initiative Assessment Math Preparation Manual

Table of Contents

Algebraic Reasoning

DIAGNOSTIC TEST #1

1) –2x – 8 = –x + 6. Solve for 3x.

TEIPE1

a. –42 b. –7

c. $-\frac{14}{3}$ d. -14

2) The length of a rectangular frame is 3 cm more than the width. The area inside the frame is 18 square cm. Find the width of the frame.

TEIPE2

a. 10 cm b. 44 cm c. 3 cm d. 6 cm

3) Simplify $\sqrt{54x^2y^3z}$

TEIPE3

a. $8xy\sqrt{6z}$ b. $3xy\sqrt{6yz}$

c. $7x\sqrt{2yz}$ d. $3x^2y^2\sqrt{6z}$

4) What are the factors of $x^2 + x - 12$?

TEIPE4

a. (x + 4)(x + 3) b. (x – 2)(x + 6)

c. (x – 4)(x – 3) d. (x + 4)(x – 3)

5) A bag contains 8 red marbles, 7 blue marbles, and 8 green marbles. What is the probability of choosing a marble that is not red from the bag?

TEIPE5

a. $\frac{8}{23}$ b. $\frac{15}{23}$ c. $\frac{14}{23}$ d. $\frac{16}{23}$

6) If y varies directly as x if x = – 6 when y = 4. Find the value of x when y is – 6.

TEIPE6

a. 24 b. – 36 c. 9 d. $\frac{-2}{3}$

7) Which of the following represents a non-linear function?

TEIPE7

a. y = – 2x + 4 b. y = 3x – 5

c. $y = x^2 + 1$ d. $y = \frac{x}{2}$

8) Find the area of the image.

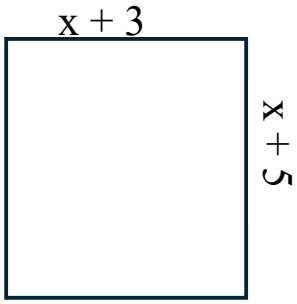
TEIPE8

a. $x^2 + 8x + 15$

b. 2x + 8

c. $x^2 + 15$

d. 4x + 16



9) If all the boxes of Cowgirl cookies are sold, 30% are Green Mints. If a Girl Scout troop sells 200 boxes of cookies, how many are not Green Mints?

TEIPE9

a. 140 b. 60 c. 170 d. 600

10) $x^2 - 3x - 18$. What are the factors of the quadratic?

TEIPE10

a. (x – 3)(x + 6) b. (x – 18) (x – 1)

c. (x + 3)(x – 6) d. (x + 6) (x – 6)

11) What is 75% of 60?

TEIPE11

a. 15 b. 45

c. 30 d. ¾

12) A book is 18% off the regular price. If the regular price is x, what is the sale price of the book?

TEIPE12

a. 18x b. .82x

c. .18x d. .18x – x

13) What are the factors of $x^2 - 5x + 6$?

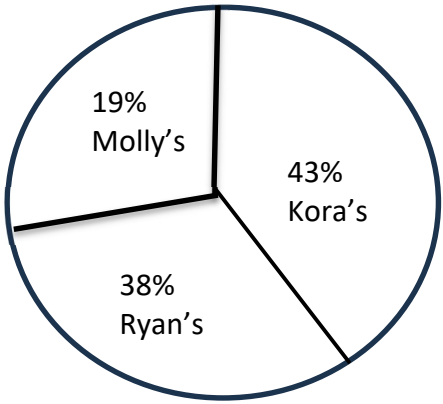
TEIPE13

a. (x – 6) (x + 1) b. (x – 3) (x – 2)

c. (x – 1)(x – 5) d. (x + 5) (x – 1)

14) The circle graph below shows three main business sources that produce 200,000 tons of cotton seed. What is the difference between Kora's and Ryan's production in tons?

TEIPE14



a. 86,000 b. 100,000 c. 10,000 d. 76,000

15) A rectangle's length is twice as long as it is wide. If the area is 242 sq feet, what is the width?

TEIPE15

a. 11 b. 60.5

c. 121 d. 58

16) Rhonda is 6 years younger than two times her brother's age. If Rhonda's brother is 42 years old. Then, how old is Rhonda?

TEIPE16

a. 36 b. 84

c. 78 d. 48

17) Find the volume of a cylinder if r=2a and h = (3a + 1). If $V = \pi r^2 h$

TEIPE17

a. V = $\pi(2a)^2(3a+1)$
b. V = $\pi(3a+1)^2(2a)$
c. V= $\pi 4a^2 + 3a$
d. V = $\pi 6a^3 + 4a$

18) If x = 4, then what does (x – 3)(x + 5) equal?

TEIPE18

a. – 1
b. 9
c. 1
d. – 9

19) What is the probability of selecting 7?

TEIPE19

3, 3, 3, 3, 5, 5, 5, 7, 7, 7, 7, 8, 8, 8, 9, 9

a. ¼ b. $\frac{7}{16}$

c. $\frac{3}{4}$ d. $\frac{9}{16}$

20) Simplify the following expression

TEIPE20

$(4x^2 - 2x + 3) - (3x^2 + 6)$

a. $2x^2 - 21x + 6$ b. $x^2 - 2x + 9$

c. $x^2 - 2x - 3$ d. $2x^2 + x + 9$

21) If 2x – 6 = – 7x + 12, what is the value of 3x?

TEIPE21

a. 9 b. 6

c. ¼ d. 27

GEOMETRIC AND SPATIAL REASONING

1. A swimmer set a world record in the women's 1500-meter freestyle, finishing the race in 15.42 minutes. If 1 meter is approximately 3.281 feet, which set of calculations could be used to convert her speed to miles per hour?

08 2022 21

1) $\frac{1500 \text{ meters}}{15.42 \text{ min}} \bullet \frac{60 \text{ min}}{1 \text{ hour}} \bullet \frac{1 \text{ meter}}{3.281 \text{ feet}} \bullet \frac{1 \text{ mile}}{5280 \text{ feet}}$

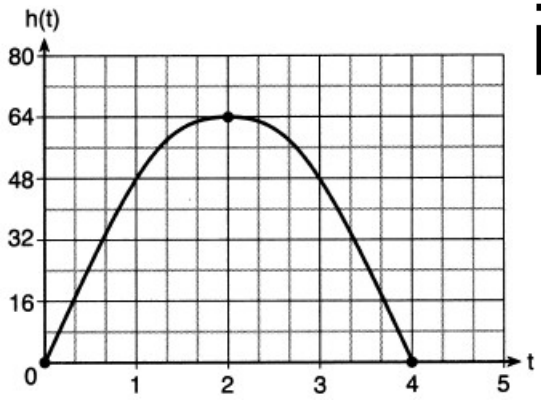
2) $\frac{1500 \text{ meters}}{15.42 \text{ min}} \bullet \frac{60 \text{ min}}{1 \text{ hour}} \bullet \frac{3.281 \text{ feet}}{1 \text{ meter}} \bullet \frac{1 \text{ mile}}{5280 \text{ feet}}$

3) $\frac{1500 \text{ meters}}{15.42 \text{ min}} \bullet \frac{3.281 \text{ feet}}{1 \text{ meter}} \bullet \frac{1 \text{ mile}}{5280 \text{ feet}}$

4) $\frac{1500 \text{ meters}}{15.42 \text{ min}} \bullet \frac{60 \text{ min}}{1 \text{ hour}} \bullet \frac{1 \text{ mile}}{5280 \text{ feet}}$

2. The diagram below shows the graph of $h(t)$, which models the height, in feet, of a rocket *t* seconds after it was shot into the air.

08 2022 22



The domain of $h(t)$ is

1) $(0, 4)$

2) $[0, 4]$

3) $(0, 64)$

4) $[0, 64]$

3. The volume of a trapezoidal prism can be found using the formula $V = \frac{1}{2}a(b+c)h$. Which equation is correctly solved for *b*?

08 2022 24

1) $b = \frac{V}{2ah} + c$

2) $b = \frac{V}{2ah} - c$

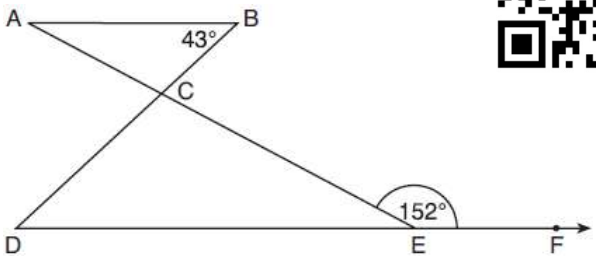
3) $b = \frac{2V}{ah} + c$

4) $b = \frac{2V}{ah} - c$

Angle and Segment Relationships

4. In the diagram below, $\overline{AB} \parallel \overrightarrow{DEF}$, $\overline{AE}$ and $\overline{BD}$ intersect at C, $m\angle B = 43°$, and $m\angle CEF = 152°$.

06 2018 02

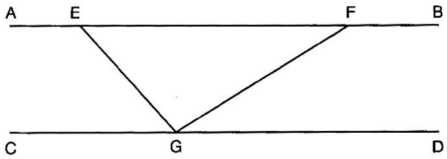


Which statement is true?

1) $m\angle D = 28°$
2) $m\angle A = 43°$
3) $m\angle ACD = 71°$
4) $m\angle BCE = 109°$

5. In the diagram below, $\overline{AEFB} \parallel \overline{CGD}$, and $\overline{GE}$ and $\overline{GF}$ are drawn.

08 2018 01

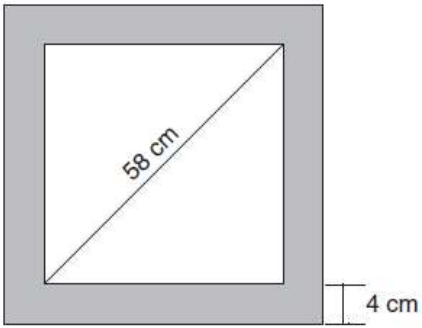


If $m\angle EFG = 32°$ and $m\angle \text{AEG} = 137°$, what is the $m\angle EGF$?

1) 11°
2) 43°
3) 75°
4) 105°

Angle and Segment Relationships in Triangles and Polygons

6. Keira has a square poster that she is framing and placing on her wall. The poster has a diagonal 58 cm long and fits exactly inside the frame. The width of the frame around the picture is 4 cm. 08 2017 34

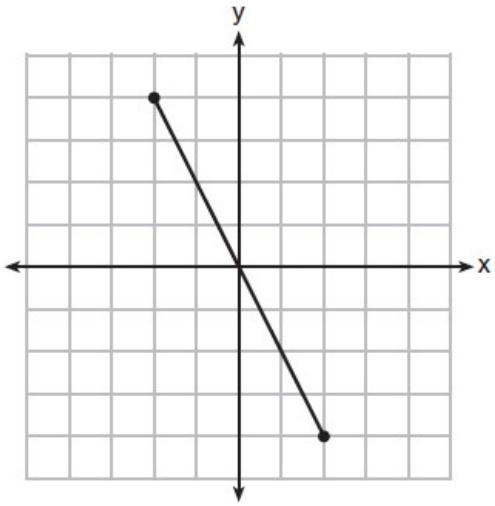


Determine and state the total area of the poster and frame to the *nearest tenth of a square centimeter*.

Circles, Lines and Segments on the Coordinate Plane

7. What is an equation of the perpendicular bisector of the line segment shown in the diagram below?

08 2017 24



1) $y + 2x = 0$

2) $y - 2x = 0$

3) $2y + x = 0$

4) $2y - x = 0$

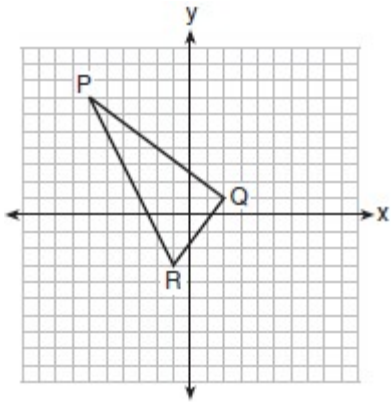
8. What is an equation of a line that is perpendicular to the line whose equation is $2y = 3x - 10$ and passes through $(-6, 1)$?

06 2017 19

1) $y = -\frac{2}{3}x - 5$
2) $y = -\frac{2}{3}x - 3$
3) $y = \frac{2}{3}x + 1$
4) $y = \frac{2}{3}x + 10$

9. On the set of axes below, the vertices of $\triangle PQR$ have coordinates $P(-6, 7)$, $Q(2, 1)$, and $R(-1, -3)$.

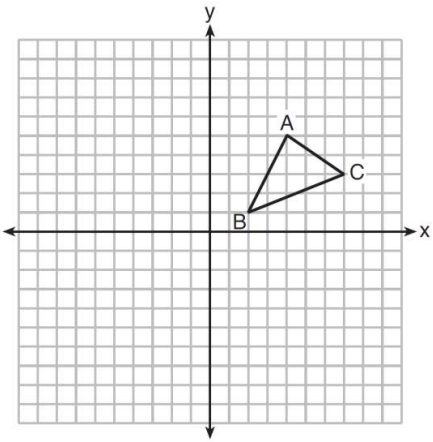
06 2017 02



What is the area of $\triangle PQR$?

1) 10
2) 20
3) 25
4) 50

10. In the diagram below, $\triangle ABC$ has vertices $A(4,5)$, $B(2,1)$, and $C(7,3)$. 06 2016 14



What is the slope of the altitude drawn from *A* to $\overline{BC}$?

1) $\frac{2}{5}$

2) $\frac{3}{2}$

3) $-\frac{1}{2}$

4) $-\frac{5}{2}$

11. What is an equation of the line that passes through the point $(6,8)$ and is perpendicular to a line with equation $y = \frac{3}{2}x + 5$? 06 2018 12

1) $y - 8 = \frac{3}{2}(x - 6)$

2) $y - 8 = -\frac{2}{3}(x - 6)$

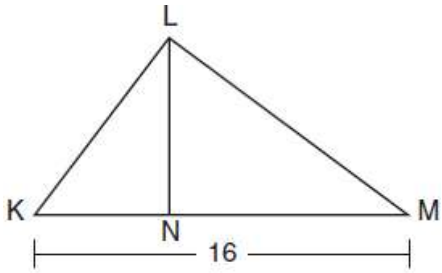
3) $y + 8 = \frac{3}{2}(x + 6)$

4) $y + 8 = -\frac{2}{3}(x + 6)$

Similarity

12. Kirstie is testing values that would make triangle *KLM* a right triangle when $\overline{LN}$ is an altitude, and $KM = 16$, as shown below.

08 2017 18

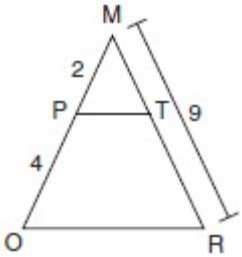


Which lengths would make triangle *KLM* a right triangle?

1) $LM = 13$ and $KN = 6$
2) $LM = 12$ and $NM = 9$
3) $KL = 11$ and $KN = 7$
4) $LN = 8$ and $NM = 10$

13. Given $\triangle MRO$ shown below, with trapezoid *PTRO*, $MR = 9$, $MP = 2$, and $PO = 4$.

06 2017 05



What is the length of $\overline{TR}$?

1) 4.5
2) 5
3) 3
4) 6

Angle and Segment Relationships in Triangles and Polygons 2

14. Two sides of a triangle are 8 and 11. Which of the following could be the length of the third side of the triangle?

NEXT GEN Angles 1

(A) 18 (B) 19

(C) 20 (D) 22

15. Which of the following sets of side lengths could represent the sides of a triangle?

NEXT GEN Angles 2

(A) {2, 3, 6} (B) {7, 9, 18}

(C) {1, 1, 10} (D) {1, 10, 10}

16. Given $\triangle QRS$ with $QR = 7$ and $RS = 10$. Which inequality represents the possible lengths of QS?

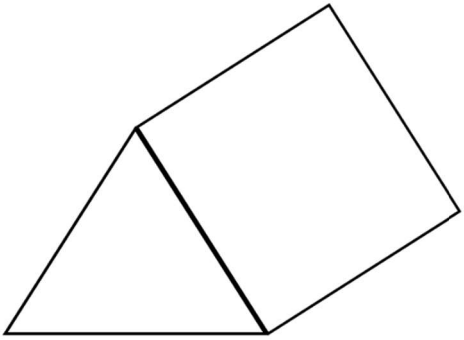
NEXT GEN Angles 3

(A) $3 \leq x \leq 17$ (B) $3 < x < 17$

(C) $7 < x < 10$ (D) $0 \leq x \leq 18$

Geometry

17.



Geo 13

The picture above shows a regular triangle with sides of length k and a square with sides of length k. If the area of the square is 27 square inches, what is the height of the triangle?

18. What is the slope of the line through $(5, -4)$ and $(9, 5)$ in the standard (x, y) coordinate plane?

G1 10

a. 1 b. 9

c. -9 d. $\frac{9}{4}$ e. $-\frac{9}{4}$

19. In the standard (x, y) coordinate plane, what is the slope of the line $3x + 8y = 5$? G1 13

a. $-\frac{3}{8}$ b. $\frac{3}{5}$

c. –3 d. 3 e. 5

20. What is the slope of any line perpendicular to the line $7x + 5y = 10$ in the standard (x, y) coordinate plane? G1 14

a. –7 b. $-\frac{7}{5}$

c. $\frac{5}{7}$ d. $-\frac{5}{7}$

e. 7

21. Which of the following is the slope of a line parallel to the line $y = \frac{5}{3}x - 8$ in the standard (x, y) coordinate plane? G1 18

a. –8

b. $-\frac{3}{5}$

c. 5

d. $\frac{3}{5}$

e. $\frac{5}{3}$