

Math 9 Practice Exam

Answer Key

- A 1. Haley will not go on a cruise because the boat may sink even though cruise ships are very rarely involved in accidents. Is her decision based on theoretical probability, experimental probability, or subjective judgment?
- Subjective judgment
 - Experimental probability
 - A combination of theoretical and experimental probability
 - Theoretical probability
- A 2. Ms. Frizzle interviewed her students and asked each one how much he or she was given each week as an allowance. In this survey, which of the following might be a problem?
- Privacy
 - Timing
 - Use of Language
 - Cost
- D 3. Which of the following data collection methods would provide the most accurate information about grade 9 students' lunch choices at a school?
- Survey a sample of students who eat lunch in the cafeteria
 - Survey all the students who eat lunch in the cafeteria
 - Survey a sample of all students in grade 9 in the school
 - Survey all grade 9 students in the school

- A 4. A local political party wants to know what people think about a new by-law banning certain types of dogs. It sends out a newsletter to everyone in the district. The newsletter contains a questionnaire and readers are asked to return their responses by mail or email. Which sampling method was used?
- a. Self-selected sampling c. Simple random sampling
 b. Systematic Sampling d. Cluster sampling

- B 5. A large white square represents an x^2 -tile, a black rectangle represents a $-x$ -tile, and a small white square represents a 1-tile.
 Write the polynomial represented by this set of algebra tiles.



- D 6. Which of the following expressions are polynomials?
- a. $-2x^2 + 3x + 4$ b. $2x^2 - 3x + 4$ c. $2x^2 - x^3 + 4$ d. $2x - 3x^2 + 4$
- i) $\frac{1}{2}x$
 ii) $1 - 5.5n^2$
 iii) $2\sqrt{t}$
 iv) 3.5
- a. i, iii, and iv b. ii and iv c. i, ii, and iii d. i, ii, and iv

- A 7. Identify the polynomials that can be represented by the same set of algebra tiles.
- i) $2x^2 - 5 + 6x \rightarrow 2x^2 + 6x - 5$
 ii) $2x^2 - 6x + 5$
 iii) $-5 + 6x - 2x^2$
 iv) $6x - 5 + 2x^2 \rightarrow 2x^2 + 6x - 5$
- A**

8. Combine like terms. Sketch algebra tiles if it helps.

$$\boxed{9x^2} - \underline{7x} + \underline{2x} - \boxed{6x^2} = 3x^2 - 5x$$

- a. $-2x^2$ b. $3x^2 - 5x$ c. $2x^2 - 4x$ d. $3x^2 + 5x$

C 9. Subtract: $(3x - 7x^2 + 2) - (4x^2 - 5 + 6x)$

- a. $-11x^2 + 3x - 7$ c. $-11x^2 - 3x + 7$
 b. $-11x^2 - 9x - 3$ d. $11x^2 + 3x - 7$

$$\begin{aligned} & (3x - 7x^2 + 2) - (4x^2 - 5 + 6x) \\ & \underline{3x} - \underline{7x^2} + \underline{2} - \underline{4x^2} + \underline{5} - \underline{6x} \\ & -11x^2 - 3x + 7 \end{aligned}$$

C 10. Multiply: $(-2)(4c^2 - 6c - 7)$
 $= -8c^2 + 12c + 14$

- a. $-8c^2 - 12c - 14$ c. $-8c^2 + 12c + 14$
 b. $2c^2 - 8c - 9$ d. $-8c^2 - 6c - 7$

C 11. Divide: $\frac{-20p^2 - 16p}{-4p}$

- a. $5p - 4p$ b. $-5p - 4$ c. $5p + 4$ d. $9p$

$$\begin{array}{r} -20p^2 & -16p \\ -4p & -4p \\ \hline 5p & + 4 \end{array}$$

D 12. Solve: $9x - 15 = 3 + 15$

- a. $\frac{46}{3}$ b. 9 c. -2 d. 2

$$\begin{aligned} 9x &= \frac{18}{9} \\ x &= 2 \end{aligned}$$

D 13. Write an equation for this statement: A number divided by 2, plus 5, is 8.

- a. $\frac{x+5}{2} = 8$ b. $\frac{x}{2} = 5+8$ c. $\frac{2}{x} + 5 = 8$ d. $\frac{x}{2} + 5 = 8$

$$\frac{x}{2} + 5 = 8$$

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$$\frac{x}{2} + 5 = 8$$

D 14. Solve: $3(5q - 4) = 2(4q + 6)$
 a. $q = -3\frac{3}{7}$ b. $q = \frac{7}{24}$ c. $q = -\frac{7}{24}$ d. $q = 3\frac{3}{7}$

$$3(5q - 4) = 2(4q + 6)$$

$$15q - 12 = 8q + 12$$

C 15. Which of these graphs represent the solution of the inequality $q - 2 \leq 0$?

$$q - 2 \leq 0$$

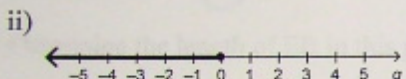
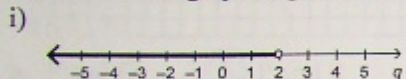
$$q \leq 2$$

$$15q - 8q = 12 + 12$$

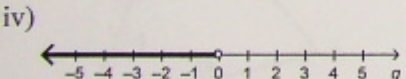
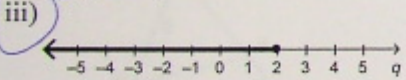
$$7q = \frac{24}{7}$$

$$q = \frac{24}{7}$$

$$3\frac{3}{7}$$



a. $5p^2 - 10p$ b. $5p + 4$ c. $80p^2 - 64$ d. $5p + 4p$



a. Graph ii b. Graph iv c. Graph iii d. Graph i

C 16. Solve: $20 - 3t > 5 - 20$
 $-3t > -15$
 $t < 5$
 a. $t < -5$ b. $t > -5$ c. $t < 5$ d. $t > 5$

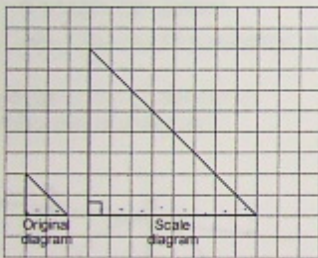
$$t < 5$$

17. A bouncy castle company charges a flat rate of \$25, plus \$13 per hour. Shane has \$121.
Write an inequality to represent the number of hours, d , for which he can rent the bouncy castle.

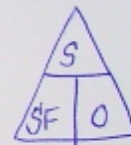
- a. $25 + 13d > 121$
- b. $25 + 13d \geq 121$
- c. $25 + 13d \leq 121$
- d. $25 + 13d < 121$

$$25 + 13h \leq 121$$

18. Determine the scale factor for this scale diagram.



$$\begin{aligned} SF &= \frac{\text{Scale}}{\text{Org.}} \\ &= \frac{8}{2} \\ &= 4 \end{aligned}$$

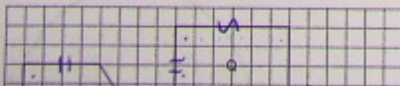


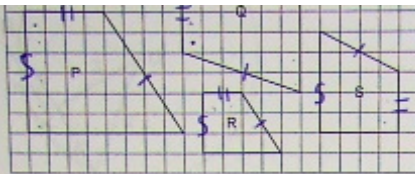
- a. 32
- b. 8
- c. 4
- d. $\frac{1}{4}$

19. A ferris wheel has diameter 65m. Determine the diameter on a scale diagram if the scale factor is 0.06.
a. 71 m b. 3.9 m c. 108 m d. 39 m

$$\begin{aligned} SF &= 0.06 \\ S &= ? \\ O &= 65 \\ 65 \times 0.06 &= 3.9 \end{aligned}$$

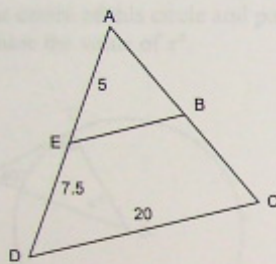
20. Identify similar quadrilaterals.





- a. P and Q **b. P and R** c. R and S d. Q and S

C 21. Determine the length of EB in this pair of similar triangles.



$$\triangle ABE \sim \triangle ACD$$

$$\frac{AB}{AC} = \frac{BE}{CD} = \frac{AE}{AD}$$

$$\frac{AB}{AC} = \frac{BE}{20} = \frac{5}{12.5}$$

$$\frac{x}{20} = \frac{5}{12.5}$$

$$12.5x = 100$$

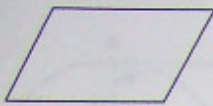
$$x = 8$$

- C** 22. When the shadow of a flagpole is 33.6 m long, a 1.8-m fencepost casts a shadow 2.8 m long. How tall is the flagpole?
 a. 52.3 m b. 21.6 m **c. 21.6 m** d. 12.6 m

$$\frac{\text{Flagpole Height}}{\text{Flagpole Shadow}} = \frac{\text{Fencepost Height}}{\text{Fencepost Shadow}}$$

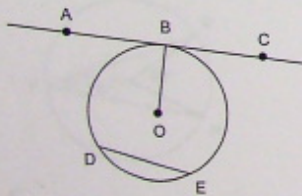
$$\frac{x}{33.6} = \frac{1.8}{2.8}$$

23. Describe the rotational symmetry and line symmetry of this parallelogram.



- a. Rotational symmetry of order 2 about the centre; no line symmetry
- b. Rotational symmetry of order 2 about the centre; 1 line of symmetry through the centre
- c. Rotational symmetry of order 1 about the centre; 1 line of symmetry through the centre
- d. No rotational symmetry; no line symmetry

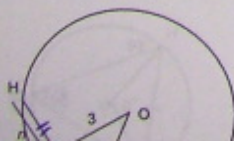
AC 24. O is the centre of this circle.
Which line is a tangent?



$$b = 4$$

$$n = 4$$

B 25. O is the centre of the circle.
Determine the value of n to the nearest tenth, if necessary.

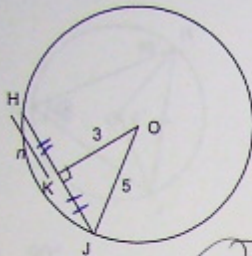


$$a^2 = c^2 - b^2$$

$$a^2 = 5^2 - 3^2$$

$$a^2 = 25 - 9$$

- B 25. O is the centre of the circle.
Determine the value of n to the nearest tenth, if necessary.



- a. 16 b. 4 c. 2 d. 5.8

$$a^2 = c^2 - b^2$$

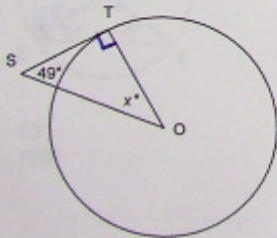
$$a^2 = 5^2 - 3^2$$

$$a^2 = 25 - 9$$

$$\sqrt{a^2} = \sqrt{16}$$

$$a = 4$$

- D 26. O is the centre of this circle and point T is a point of tangency.
Determine the value of x° .

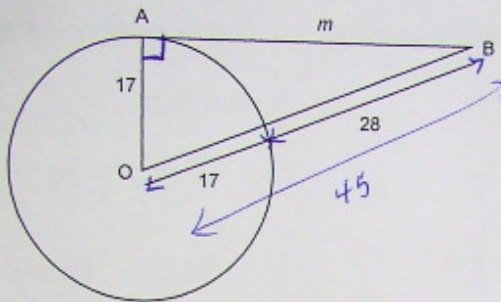


- a. 90° b. 139° c. 49° d. 41°

$$90 + 49 = 139^\circ$$

$$180^\circ - 139^\circ = 41^\circ$$

27. O is the centre of this circle and point A is a point of tangency. Determine the value of m . If necessary, give your answer to the nearest tenth.



$$17 + 28 = 45$$

$$a^2 = c^2 - b^2$$

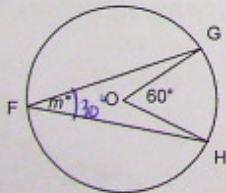
$$a^2 = 45^2 - 17^2$$

$$a^2 = 2025 - 289$$

$$\sqrt{a^2} = \sqrt{1736}$$

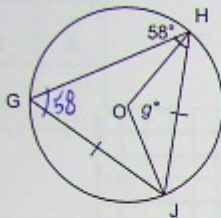
$$a = \underline{\underline{41.7}}$$

- A a. 28 b. 8.1 c. 41.7 d. 48.1
28. O is the centre of this circle. Determine the value of m° .



- D a. 30° c. 180°
 b. 90° d. 60°
29. O is the centre of this circle. Determine the value of g° .

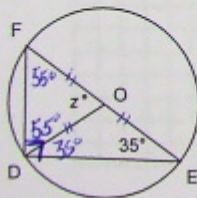
- a. 50°
 b. 90°
 c. 180°
 d. 60°
- D** 29. O is the centre of this circle.
Determine the value of g° .



~~5800000000~~
~~10000000000~~

$58 \times 2 = 116^\circ$

- a. 90°
 b. 58°
 c. 64°
 d. 116°
- D** 30. O is the centre of this circle.
Determine the value of z° .



- a. 55°
 b. 110°
 c. 90°
 d. 70°

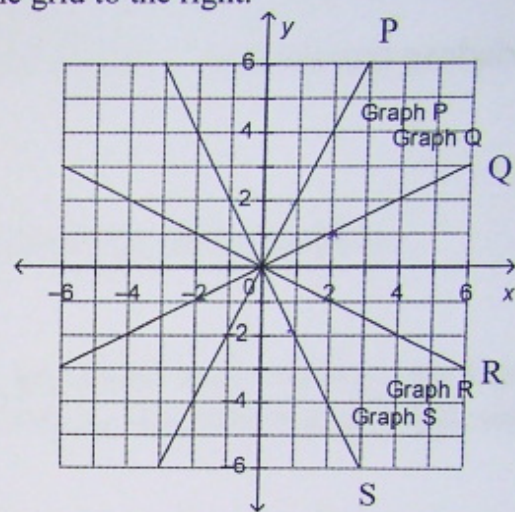
31. Match each equation with a graph on the grid to the right.

a) $y = \frac{1}{2}x$ Graph: Q

b) $y = -\frac{2}{1}x$ Graph: S

c) $y = +\frac{2}{1}x$ Graph: P

d) $y = -\frac{1}{2}x$ Graph: R



32. Complete the table of values for the following equation, then draw the graph.

$$y = 3x - 1$$

Show your work for the first two values of x.

x	y
-2	-7

$x = -2$
 $y = 3x - 1$

$x = -1$
 $y = 3x - 1$

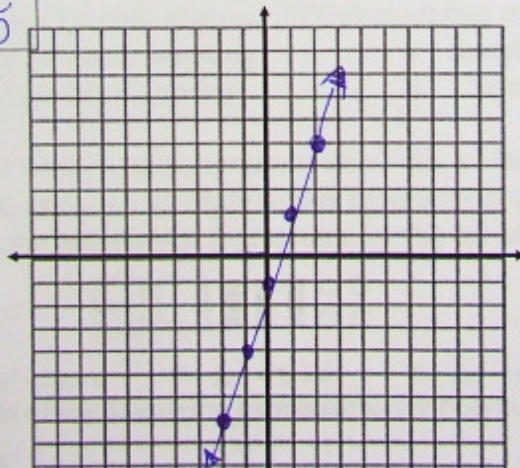
32. Complete the table of values for the following equation, then draw the graph.

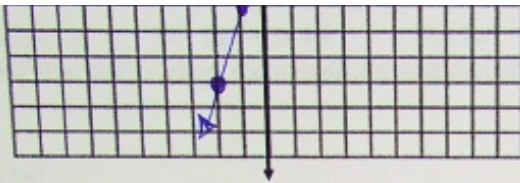
$$y = 3x - 1$$

Show your work for the first two values of x.

x	y
-2	-7
-1	-4
0	-1
1	2
2	5

x = -2	x = -1
$y = 3x - 1$	$y = 3x - 1$
$y = 3(-2) - 1$	$y = 3(-1) - 1$
$= -6 - 1$	$y = -3 - 1$
$= -7$	$y = -4$





33. Jeff got a new cell phone for his birthday. His plan consists of a set fee of \$20, plus \$0.50 for each text.

a) Write the **equation** that represents this linear relation.

$$y = 20 + 0.50t$$

b) What is the **cost** of Jeff sending 112 text messages each month?

$$\begin{aligned} y &= 20 + 0.50(112) \\ &= 20 + 56 \\ &= \underline{\underline{\$76.00}} \end{aligned}$$

c) Determine the **number** of messages he can send for \$150.

$$\begin{aligned} y &= 20 + 0.50t \\ 150 &= 20 + 0.50t \\ 150 - 20 &= 0.50t \\ \frac{130}{0.50} &= \frac{0.50t}{0.50} & t &= \underline{\underline{260}} \end{aligned}$$