



Diagnostic Guide

Grade 8

What this document covers

Section 1 Diagnostic Assessment Interface.

Section 2 Guide to Diagnostic Skill Entry Points (Tables 1–3).

Overview and Purpose

The Beginning-of-Year (BOY) Screener is a targeted diagnostic assessment consisting of 23 questions designed to evaluate student mastery of prerequisite standards from the prior grade level. For Grade 8, the screener specifically assesses Grade 7 TEKS to determine each student's readiness for on-grade-level instruction.

This diagnostic tool serves three primary functions:

1. **Snapshot of Readiness:** Measures student mastery of the previous grade's standards to establish a baseline for instruction.
2. **Actionable Insights:** Highlights specific strengths and areas of growth for both whole-class planning and individual student intervention.
3. **Automated Recommendations:** Assessment data automatically generates initial Practice Mode recommendations, assigning the specific skill entry points and interventions detailed in this guide.

How to Use This Guide

Based on the actionable insights generated by the screener, educators should use the following tables to identify and assign the appropriate skill entry points and interventions:

- **For Targeted Practice (Table 1):** Assign these Practice Cards for students who need a focused refresher on specific discrete skills (e.g., below 70% proficiency on individual questions). These can be used for independent work, station activities, or homework.
- **For Comprehensive Reteaching (Table 2):** Use these Grade 7 instructional chapters and sections for students demonstrating significant gaps across an entire domain (e.g., below 50% proficiency). These resources provide the conceptual foundation and guided instruction necessary to rebuild understanding before attempting Grade 8 content.
- **For Vertical Alignment (Table 3):** Refer to this matrix to see how each prerequisite skill connects to upcoming Grade 8 TEKS and chapters. Use this to prioritize interventions that are most critical for the specific Grade 8 content currently being taught.

Section 1: Diagnostic Assessment Interface

The figure below demonstrates the teacher's view of the Grade 8 BOY Screener. This digital interface captures the student response data necessary to generate the recommended skill entry points and interventions detailed in Tables 1, 2, and 3.

Figure 1. Grade 8 Beginning-of-Year Diagnostic Screener — Teacher View

Texas Screeners > Grade 8 > ☐ Grade 8 - BOY - TX

☐ Mild

1. Which expression is equivalent to $\frac{3}{4} + \left(-\frac{5}{6}\right) \cdot 2$?

☐ $\frac{3}{4} + \frac{10}{6}$
☐ $\frac{3}{4} - \frac{10}{6}$

☐ $\frac{3}{4} - \frac{5}{12}$
☐ $\frac{3}{4} + \frac{5}{3}$

2. Evaluate the expression.

$-1.5 + \left(\frac{2}{3} + (-0.25)\right)$

Answer with a fraction in simplest form.

☐ $-\frac{25}{6}$

3. The table shows values with three quantities x , y and z .

Select the two proportional quantities.

x	y	z
3	9	15
6	18	31
9	27	45
12	36	61

☐ x
☐ y

☐ z

4. Solve for x .

$\frac{x}{5} = \frac{12}{3}$

☐ $x = 20$

5. A jacket originally costs \$100. The price is increased by 20%. Then the new price is decreased by 20%. What is the final price of the jacket?

☐ \$96

6. An item is on sale for \$60 after a 25% discount. What was the original price of the item before the discount?

☐ \$80

7. Triangle ABC has been dilated with center at the origin to triangle $A'B'C'$. What is the scale factor of the dilation?

☐ 0.5

9. Two bar graphs show the number of animals observed in different habitats over the weekend.

Graph A: 1 mark = 5 animals

Graph B: 1 mark = 3 animals

Which graph shows more total animals observed?

A. Graph A

B. Graph B

C. Both graphs represent the same total

D. There is not enough information to decide

☐ A
☐ B
☐ C
☐ D

10. The line plot below shows the number of jumping jacks completed by students in PE class. Each point represents one student.

Which number of jumping jacks is an outlier in this data set?

Number of Jumping Jacks

☐ 28

11. A pie chart shows how students at a middle school get to school. There are currently 200 students in the school.

If the number of students increases to 300, and the proportions stay the same, how many students would be expected to walk to school?

Way to School

☐ 120

17. A square pyramid has a volume of 120 cubic centimeters and a height of 10 centimeters. What is the area of the base?

☐ 36 cm²

18. The circumference of a circle is 31.4 ft. Calculate the area of the circle. Use $\pi \approx 3.14$.

☐ 78.5 ft²

19. The diagram below shows a rectilinear figure made from two rectangles joined together. What is the total area of the figure?

☐ 233 in²

20. The diagram shows a composite figure of a half-circle attached to one side of a rectangle. Find the perimeter of the entire figure. Use $\pi \approx 3.14$ and round your answer to the nearest tenth.

☐ 49.1 cm

21. Solve for x .

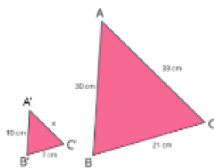
$3x + 7 = 28$

☐ $x = 7$

22. Carlos is saving money to buy a new bike. He already has \$40. He plans to save \$6 each week. The bike he wants costs no more than \$100. Solve the inequality and find the maximum number of full weeks Carlos can save money without exceeding \$100.

☐ 10 weeks

8. Triangle ABC and $A'B'C'$ are similar figures with a scale factor of $\frac{1}{3}$. Find the length of side x .



☐ 11 cm

12. The table shows the sample space for rolling two six-sided dice. Each cell shows the sum of the two dice. There are 36 possible outcomes in total. What is the probability that the sum of the two dice is greater than 9? Write your answer as a fraction in simplest form.

	1	2	3	4	5	6
1	2	3	4	5	6	7
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10
5	6	7	8	9	10	11
6	7	8	9	10	11	12

☒ $\frac{1}{6}$

13. The table shows the results of spinning a spinner 100 times. Each outcome (A, B, C, D) represents a section of the spinner. Based on the results, which outcome is least likely to occur on the next spin?

Outcome	Frequency
A	30
B	25
C	40
D	5

☐ Outcome A

☐ Outcome B

☐ Outcome C

☒ Outcome D

14. The table shows a linear relationship between x and y . Use the pattern to predict the value of y when $x = 6$.

x	y
1	5
2	8
3	11
4	14

☐ $y = 20$

15. Which of the following is equivalent to the equation written in slope-intercept form?
 $2x + 3y = 12$

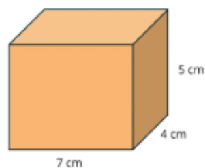
☐ $y = \frac{3}{2}x + 12$

☒ $y = -\frac{2}{3}x + 4$

☐ $y = \frac{2}{3}x - 4$

☐ $y = -\frac{3}{2}x + 6$

16. The dimensions of a right rectangular prism are shown. Find the volume of the prism.

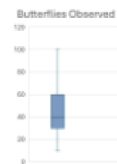


☐ 140 cm^3

23. A wildlife researcher tracked the number of butterflies observed each day in a field over the course of a month. The data is displayed in the box plot.

Which of the following best describes the distribution of the number of butterflies observed per day?

- A. Skewed left
B. Skewed right
C. Symmetric
D. Cannot be determined



☐ A

☒ B

☐ C

☐ D

Section 2: Guide to Diagnostic Skill Entry Points

Table 1: Diagnostic Intervention Guide — Recommended Practice Cards

This table maps each diagnostic question to targeted Practice Cards within the curriculum. These resources are designed for immediate, focused intervention—allowing students to practice the specific discrete skills identified as gaps (e.g., below 70% proficiency) without pausing the entire class for a full reteach. Teachers can assign these cards as independent work, station activities, or homework to efficiently close skill gaps.

Diagnostic Strand	Question(s)	Prerequisite TEKS (Grade 7)	Recommended Practice Cards
Operations	Q1, Q2	7.3.B	• Add and subtract rational numbers
Algebraic Reasoning	Q3	7.4.A	• Identify situations with constant rates
	Q4, Q5, Q6	7.4.D	• Use proportions to solve percent problems • Solve problems with multiple percent changes
	Q14, Q15	7.7	• Write line equations in slope-intercept form • Interpret linear functions
	Q21, Q22	7.11.A	• Solve problems using one-variable equations • Solve two-step linear inequalities
Geometry and Measurement	Q7, Q8	7.5.C	• Calculate lengths in scale drawings
	Q16, Q17	7.9.A	• Calculate volume of right rectangular prism • Calculate volume of pyramids
	Q18	7.9.B	• Find area of circle from radius or diameter
	Q19, Q20	7.9.C	• Find area of polygons made of triangles and rectangles
Data Analysis	Q9, Q10, Q11	7.6.G	• Interpret data in diagrams
	Q12, Q13	7.6.I	• Calculate probability of compound events
	Q23	7.12.A	• Compare spread using IQR and standard deviation

Table 2: Prerequisite Reteach Guide — Grade 7 Instructional Alignment

For students demonstrating significant gaps (e.g., below 50% proficiency) across an entire domain, targeted practice alone may not be sufficient. This table directs educators to the full Grade 7 instructional chapters and sections required for deep reteaching. These resources provide the conceptual foundation and guided instruction necessary to rebuild prerequisite understanding before students attempt Grade 8 content.

Diagnostic Strand	Question(s)	Prerequisite TEKS (Grade 7)	Recommended Chapter	Recommended Sections
Operations	Q1, Q2	7.3.B	Operations on Rational Numbers	- Adding rational numbers - Adding rational numbers including percents - Dividing rational numbers - Dividing rational numbers including percents - Multi-step problems with rational numbers - Multiplying rational numbers - Multiplying rational numbers including percents - Subtracting rational numbers - Subtracting rational numbers including percents
Algebraic Reasoning	Q3	7.4.A	Proportional Relationships	- Graphing proportional relationships - Proportional relationships as equations
	Q4, Q5, Q6	7.4.D	Proportional Relationships	- Calculating tax - Find part with percents - Find percents - Find whole with percents - Identifying constant of proportionality - Percent increase and percent decrease - Solving percent problems - Solving proportions - Tax, markups, markdowns, gratuities, and commissions
	Q14, Q15	7.7	Linear Relationships	- Defining linear relationships - Writing linear equations in slope-intercept form
	Q21, Q22	7.11.A	Equations and Inequalities	- Solving two-step equations - Solving two-step inequalities
Geometry and Measurement	Q7, Q8	7.5.C	Proportional Relationships	Proportions in scale drawings
	Q16, Q17	7.9.A	Volume	- Volume of prisms - Volume of pyramids
	Q18	7.9.B	Circles	- Area of circles - Circumference

Diagnostic Strand	Question(s)	Prerequisite TEKS (Grade 7)	Recommended Chapter	Recommended Sections
	Q19, Q20	7.9.C	Area and Surface Area	• Area and circumference of composite figures including circles • Area of irregular polygons
Data Analysis	Q9, Q10, Q11	7.6.G	Data and Statistical Inferences	• Solve problems using bar graphs, dot plots, and circle graphs
	Q12, Q13	7.6.I	Probability	• Probability of compound events • Probability of simple events
	Q23	7.12.A	Data and Statistical Inferences	• Comparative inferences • Comparing center and variability

Table 3: Vertical Alignment Matrix — Connecting Prerequisites to Grade 8 Content

This matrix illustrates the instructional bridge between the Grade 7 prerequisite skills assessed in the diagnostic and the upcoming Grade 8 Target TEKS. It provides the rationale for intervention by showing exactly which Grade 8 chapters and units rely on these prerequisites. Educators should use this table to prioritize interventions that are most critical for the specific Grade 8 content currently being taught.

Diagnostic Strand	Question(s)	Prerequisite TEKS (Grade 7)	Aligned Target TEKS (Grade 8)	Chapters Addressed
Operations	Q1, Q2	7.3.B	8.2	• Real Numbers
Algebraic Reasoning	Q3	7.4.A	8.4	• Graphing Linear Relationships
	Q4, Q5, Q6	7.4.D	8.5	• Constructing Linear Relationships • Graphing Linear Relationships
	Q14, Q15	7.7	8.5	• Constructing Linear Relationships • Graphing Linear Relationships
	Q21, Q22	7.11.A	8.8	• One-Variable Equations • Angle Sum and Transversals
Geometry and Measurement	Q7, Q8	7.5.C	8.3	• Transformation on the Coordinate Plane
	Q16, Q17	7.9.A	8.7	• Volume, Surface Area, and Pythagorean Theorem
	Q18	7.9.B	8.7	• Volume, Surface Area, and Pythagorean Theorem
	Q19, Q20	7.9.C	8.7	• Volume, Surface Area, and Pythagorean Theorem
Data Analysis	Q9, Q10, Q11	7.6.G	8.11	• Constructing Linear Relationships • Statistics
	Q12, Q13	7.6.I	8.11	• Constructing Linear Relationships • Statistics
	Q23	7.12.A	8.11	• Constructing Linear Relationships • Statistics