

Compensatory/Access Skills

Tactile Graphics Skills for Math

Student Name: _____ School Year: _____

Directions:

1. This assessment should be used to determine present level of performance, to write IEP objectives and to determine yearly progress.
2. For the Pre-test, assess each objective to determine present level of performance. Add all marks in the Pre-test **C** columns and record the subtotal at the bottom of each page, then add all of the subtotals together and enter the total in the "Total of this Skill Area" **and** the total on the back of this page. (See "Suggested Scoring Guide" below.)
3. For the Post-test, review all areas of the assessment where programming has occurred or IEP goals have been addressed to determine what **new** skills are at the Competency (**C**) level. Add all marks in the **New Cs** column and record the subtotal at the bottom of each page, then add all of the subtotals together and enter the total in the "Total of this Skill Area" **and** the total on the back of this page. Determine progress by dividing the "Post-test" C's by the "Pre-test" C's. (See "Determination of Progress" below for an example of how progress can be calculated.)
4. For charting "Pre-test" and "Post-test" scores, a graph has been included.

SUGGESTED Scoring Guide:

C = Competency

Competency for an objective is determined by the student's ability to perform a skill using one of the following criteria:

- consistently (100% of the time) in at least one setting with minimal support (no more than 2 prompts)
- frequently (90%-100% of the time) in several settings with minimal support (no more than 2 prompts)

TEKS and the Determination of Approximate Grade Level:

- Included in this assessment are the TEKS (and corresponding grade levels) that most closely align to each objective.
- There are some objectives for which there are no related TEKS. In such cases, ECC (Expanded Core Curriculum) will be listed in the TEKS column.
- The approximate grade level will be the level at which the majority of the objectives were mastered. ("C")
- Students with visual impairment often have many "splinter skills" (above and below grade level) but the grade levels aligned to the TEKS on the assessment should be helpful in determining an approximate level.

Determination of Progress:

The following scale can be used to determine progress on the "Post-test:"

- 1 = none to minimal progress: less than 10% increase in skills.
- 2 = moderate progress: 10% - 19% increase in skills.
- 3 = substantial progress: 20% or greater increase in skills.

Included in this assessment are the TEKS (and corresponding grade levels) that most closely align to each objective. These objectives are taken from the Pre-Kindergarten Physical Development, Language Arts, and Math Guidelines; also Kindergarten Language Arts (110.2) and Math (111.12) TEKS. A list of these TEKS is attached for your convenience.

There are some objectives for which there are no related TEKS. In such cases, ECC (Expanded Core Curriculum) will be listed in the TEKS column.

Add subtotals from each page and enter the totals here:

Skill Areas	Pre-test Date	Assessor	Cs	Post-test Date	Assessor	New Cs
<i>Motor Skills</i> (38)						
<i>Tactile Discrim. and Identification</i> (78)						
<i>Spatial Concepts</i> (44)						
<i>Interpreting and Creating Tactile Graphics</i> (75)						
<i>Application of Skills to Grade Level Problems</i> (16)						
Total Pre-test				Total Post-test		

Grand total (Pre-test, Post-test)

Note: () numbers in parentheses denote total possible marks student can achieve.
(Total 251 possible)

MOTOR SKILLS	TEKS	Gr. Level	Pre-test Cs	Post-test New Cs
A. Uses two hands in an organized manner to manipulate objects (e.g., grasp/release, twist/turn, rotate and examine, open/close, stack/nest).	PK Phys. Dev. (3)	PK		
B. Uses fingers independently.				
1. Pincer grasp (thumb/forefinger)	PK Phys. Dev. (3)	PK		
2. Probes/pokes with forefinger	PK Phys. Dev. (3)	PK		
3. Spreads fingers	PK Phys. Dev. (3)	PK		
4. Wiggles fingers independently one at a time	PK Phys. Dev. (3)	PK		
5. Holds fingers together on command	PK Phys. Dev. (3)	PK		
C. Identifies individual fingers (i.e., pointer, middle, ring, pinkie, thumb).	PK Phys. Dev. (3)	PK		
D. Demonstrates the motoric skills for reading and writing tactile materials.				
1. Finger dexterity (e.g., finger isolation, curving fingers, aligning fingers on a Braille line)	PK Phys. Dev. (3).	PK		
2. Wrist flexibility (e.g., rotation, flexion, extension)	PK Phys. Dev. (3).	PK		
3. Coordinated hand and finger movements	PK Phys. Dev. (3).	PK		
4. Hand and finger strength	PK Phys. Dev. (3).	PK		
5. Light touch	PK Phys. Dev. (3).	PK		
E. Demonstrates the motor skills for drawing.				
1. Scribbles	PK L. A. (10)	PK		
2. Makes marks				
a. horizontal	110.2 - K.14(E)	K		
b. vertical	110.2 - K.14(E)	K		
c. circular	110.2 - K.14(E)	K		
d. diagonal	110.2 - K.14(E)	K		
e. cross	110.2 - K.14(E)	K		
f. shapes	110.2 - K.14(E) 110.3 - 1.17(E)	K 1		
SUBTOTAL				

MOTOR SKILLS	TEKS	Gr. Level	Pre-test Cs	Post-test New Cs
3. Traces				
a. horizontal	110.2 - K.14(E)	K		
b. vertical	110.2 - K.14(E)	K		
c. circular	110.2 - K.14(E)	K		
d. diagonal	110.2 - K.14(E)	K		
e. cross	110.2 - K.14(E)	K		
f. shapes	110.2 - K.14(E) 110.3 - 1.17(E)	K 1		
4. Copies				
a. horizontal	110.2 - K.14(E)	K		
b. vertical	110.2 - K.14(E)	K		
c. circular	110.2 - K.14(E)	K		
d. diagonal	110.2 - K.14(E)	K		
e. cross	110.2 - K.14(E)	K		
f. shapes	110.2 - K.14(E) 110.3 - 1.17(E)	K 1		
5. Draws				
a. horizontal	110.3 - 1.23(B) 110.4 - 2.20(B)	1 2		
b. vertical	110.3 - 1.23(B) 110.4 - 2.20(B)	1 2		
c. circular	110.3 - 1.23(B) 110.4 - 2.20(B)	1 2		
d. diagonal	110.3 - 1.23(B) 110.4 - 2.20(B)	1 2		
e. cross	110.3 - 1.23(B) 110.4 - 2.20(B)	1 2		
f. shapes	110.3 - 1.23(B) 110.4 - 2.20(B)	1 2		
6. Shades/fills in areas on graphics	110.5 - 3.15(A)	3		
SUBTOTAL				

Total of this Skill Area	Pre-test	Post-test
	Cs	New Cs

TACTILE DISCRIMINATION AND IDENTIFICATION	TEKS	Gr. Level	Pre-test Cs	Post-test New Cs
A. Real objects				
1. Size				
a. large	PK Math (4)	PK		
b. small	PK Math (4)	PK		
c. big	PK Math (4)	PK		
d. little	PK Math (4)	PK		
e. medium	PK Math (4)	PK		
f. thick	PK Math (4)	PK		
g. thin	PK Math (4)	PK		
h. wide	PK Math (4)	PK		
i. narrow	PK Math (4)	PK		
j. comparisons of size (larger, smaller, etc.)	111.12 - K.10(A)	K		
2. Shape				
a. round	PK Math (3) 111.12 - K.9(C)	PK K		
b. circle	PK Math (3) 111.12 - K.9(C)	PK K		
c. square	PK Math (3) 111.12 - K.9(C)	PK K		
d. triangle	PK Math (3) 111.12 - K.9(C)	PK K		
e. rectangle	PK Math (3) 111.12 - K.9(C)	PK K		
f. oval	111.12 - K.9(C)	K		
g. cubes	111.13 - 1.6(BC) 111.14 - 2.7(AB)	1 2		
h. spheres	111.13 - 1.6(BC) 111.14 - 2.7(AB)	1 2		
i. prisms	111.13 - 1.6(BC) 111.14 - 2.7(AB)	1 2		
j. cylinders	111.13 - 1.6(BC) 111.14 - 2.7(AB)	1 2		
k. cones	111.13 - 1.6(BC) 111.14 - 2.7(AB)	1 2		
l. pyramids	111.14 - 2.7(AB) 111.15 - 3.8	2 3		
m. polygons	111.14 - 2.7(AB) 111.15 - 3.8	2 3		
SUBTOTAL				

TACTILE DISCRIMINATION AND IDENTIFICATION	TEKS	Gr. Level	Pre-test Cs	Post-test New Cs
3. Texture				
a. smooth	PK Math (5) 111.12 - K.8(A)	PK K		
b. rough	PK Math (5) 111.12 - K.8(A)	PK K		
c. hard	PK Math (5) 111.12 - K.8(A)	PK K		
d. soft	PK Math (5) 111.12 - K.8(A)	PK K		
e. raised	PK Math (5) 111.12 - K.8(A)	PK K		
f. flat	PK Math (5) 111.12 - K.8(A)	PK K		
g. coarse	PK Math (5) 111.12 - K.8(A)	PK K		
h. fine	PK Math (5) 111.12 - K.8(A)	PK K		
i. bumpy	PK Math (5) 111.12 - K.8(A)	PK K		
j. fuzzy	PK Math (5) 111.12 - K.8(A)	PK K		
k. sticky	PK Math (5) 111.12 - K.8(A)	PK K		
4. Composition				
a. cloth	PK Math (5) 111.12 - K.8(A)	PK K		
b. paper	PK Math (5) 111.12 - K.8(A)	PK K		
c. plastic	PK Math (5) 111.12 - K.8(A)	PK K		
d. wood	PK Math (5) 111.12 - K.8(A)	PK K		
e. metal	PK Math (5) 111.12 - K.8(A)	PK K		
f. leather	PK Math (5) 111.12 - K.8(A)	PK K		
5. Length				
a. long	111.12 - K.10(A) 111.13 - 1.7(B)	K 1		
b. short	111.12 - K.10(A) 111.13 - 1.7(B)	K 1		
SUBTOTAL				

TACTILE DISCRIMINATION AND IDENTIFICATION	TEKS	Gr. Level	Pre-test Cs	Post-test New Cs
c. medium	111.12 - K.10(A) 111.13 - 1.7(B)	K 1		
d. comparisons of length	111.12 - K.10(A) 111.13 - 1.7(B)	K 1		
B. Object Representations/Object Symbols				
1. Size				
a. large	111.12-K.10(AB)	K		
b. small	111.12-K.10(AB)	K		
c. big	111.12-K.10(AB)	K		
d. little	111.12-K.10(AB)	K		
e. medium	111.12-K.10(AB)	K		
f. thick	111.12-K.10(AB)	K		
g. thin	111.12-K.10(AB)	K		
h. wide	111.12-K.10(AB)	K		
i. narrow	111.12-K.10(AB)	K		
j. comparisons of size (larger, smaller, etc.)	111.12-K.10(AB)	K		
2. Shape				
a. round	111.13-1.6(A) 111.14-2.7(A)	1 2		
b. circle	111.13-1.6(A) 111.14-2.7(A)	1 2		
c. square	111.13-1.6(A) 111.14-2.7(A)	1 2		
d. triangle	111.13-1.6(A) 111.14-2.7(A)	1 2		
e. rectangle	111.13-1.6(A) 111.14-2.7(A)	1 2		
f. oval	111.13-1.6(A) 111.14-2.7(A)	1 2		
g. cubes	111.13 - 1.6(BC) 111.14 - 2.7(AB)	1 2		
h. spheres	111.13 - 1.6(BC) 111.14 - 2.7(AB)	1 2		
i. prisms	111.13 - 1.6(BC) 111.14 - 2.7(AB)	1 2		
j. cylinders	111.13 - 1.6(BC) 111.14 - 2.7(AB)	1 2		
SUBTOTAL				

TACTILE DISCRIMINATION AND IDENTIFICATION	TEKS	Gr. Level	Pre-test Cs	Post-test New Cs
k. cones	111.13 - 1.6(BC) 111.14 - 2.7(AB)	1 2		
l. pyramids	111.14 - 2.7(AB) 111.15 - 3.8	2 3		
m. polygons	111.14 - 2.7(AB) 111.15 - 3.8	2 3		
3. Texture				
a. smooth	111.12 - K.8(C)	K		
b. rough	111.12 - K.8(C)	K		
c. hard	111.12 - K.8(C)	K		
d. soft	111.12 - K.8(C)	K		
e. raised	111.12 - K.8(C)	K		
f. flat	111.12 - K.8(C)	K		
g. coarse	111.12 - K.8(C)	K		
h. fine	111.12 - K.8(C)	K		
i. bumpy	111.12 - K.8(C)	K		
j. fuzzy	111.12 - K.8(C)	K		
k. sticky	111.12 - K.8(C)	K		
4. Composition				
a. cloth	111.12 - K.8(C)	K		
b. paper	111.12 - K.8(C)	K		
c. plastic	111.12 - K.8(C)	K		
d. wood	111.12 - K.8(C)	K		
e. metal	111.12 - K.8(C)	K		
f. leather	111.12 - K.8(C)	K		
5. Length				
a. long	111.14 - 2.9(A)	2		
b. short	111.14 - 2.9(A)	2		
c. medium	111.14 - 2.9(A)	2		
d. comparisons of length	111.14 - 2.9(A)	2		
C. Graphic Materials				
1. Real object	ECC	N/A		
2. Thermoform of real object	ECC	N/A		
SUBTOTAL				

TACTILE DISCRIMINATION AND IDENTIFICATION

	TEKS	Gr. Level	Pre-test Cs	Post-test New Cs
3. Solid embossed shapes	ECC	N/A		
4. Outlines of objects	ECC	N/A		
5. Raised lines (solid and broken)	ECC	N/A		
6. Symbols/letters	ECC	N/A		
SUBTOTAL				

Total of this Skill Area

Pre-test
Cs

Post-test
New Cs

SPATIAL	TEKS	Gr. Level	Pre-test Cs	Post-test New Cs
A. For self, with objects, <i>and</i> on a page				
1. On	111.12-K.7(AB)	K		
2. Off	111.12-K.7(AB)	K		
3. In	111.12-K.7(AB)	K		
4. Out	111.12-K.7(AB)	K		
5. Left	111.12-K.7(AB)	K		
6. Right	111.12-K.7(AB)	K		
7. Up	111.12-K.7(AB)	K		
8. Down	111.12-K.7(AB)	K		
9. Above	111.12-K.7(AB)	K		
10. Below	111.12-K.7(AB)	K		
11. High	111.12-K.7(AB)	K		
12. Low	111.12-K.7(AB)	K		
13. Top	111.12-K.7(AB)	K		
14. Bottom	111.12-K.7(AB)	K		
15. Open	111.12-K.7(AB)	K		
16. Closed	111.12-K.7(AB)	K		
17. Slanted	111.12-K.7(AB)	K		
18. Level	111.12-K.7(AB)	K		
19. Next (in a sequence - could be spatial or temporal)	111.12-K.7(AB)	K		
20. Corners	111.12-K.7(AB)	K		
21. Edges	111.12-K.7(AB)	K		
22. Beside	111.12-K.7(AB)	K		
23. Through	111.12-K.7(AB)	K		
24. Middle	111.12-K.7(AB)	K		
25. Center	111.12-K.7(AB)	K		
26. Between	111.12-K.7(AB)	K		
27. Under	111.12-K.7(AB)	K		
28. Over	111.12-K.7(AB)	K		
SUBTOTAL				

SPATIAL	TEKS	Gr. Level	Pre-test Cs	Post-test New Cs
29. Upside down	111.12-K.7(AB)	K		
30. Right side up	111.12-K.7(AB)	K		
31. Curved	111.12-K.7(AB)	K		
32. Parallel	111.12-K.7(AB)	K		
33. Perpendicular	111.12-K.7(AB)	K		
34. First	111.12-K.7(AB)	K		
35. Last	111.12-K.7(AB)	K		
36. Together	111.12-K.7(AB)	K		
37. Apart	111.12-K.7(AB)	K		
38. Next to	111.12-K.7(AB)	K		
39. Away from	111.12-K.7(AB)	K		
40. Diagonal	111.12-K.7(AB)	K		
41. Straight	111.12-K.7(AB)	K		
42. Incline/Ascending	111.12-K.7(AB)	K		
43. Decline/Descending	111.12-K.7(AB)	K		
44. Slope	111.12-K.7(AB)	K		
SUBTOTAL				

Total of this Skill Area	Pre-test	Post-test
	Cs	New Cs

INTERPRETING AND CREATING TACTILE GRAPHICS	TEKS	Gr. Level	Pre-test Cs	Post-test New Cs
A. Systematic Search				
1. Locates top and bottom of a page	PK L. A. (6) 110.2-K.5(B)	PK K		
2. Locates right and left sides of a page	PK L. A. (6) 110.2-K.5(B)	PK K		
3. Tracks along top, bottom , left and right edges of a page	PK L. A. (6) 110.2-K.5(B)	PK K		
4. Locates middle/center of a page	PK L. A. (6) 110.2-K.5(B)	PK K		
5. Finds real objects on a page	PK L. A. (6) 110.2-K.5(B)	PK K		
6. Finds graphic information on a page	PK L. A. (6) 110.2-K.5(B)	PK K		
7. Explores simple tactual illustrations	110.2-K.5(B) 111.13 - 1.6(A)	K 1		
8. Locates the beginning and end of a raised line	110.2-K.5(B)	K		
9. Tracks raised solid and broken lines from left to right using both hands	110.2-K.5(B)	K		
10. Tracks from left to right across symbols that have one or more blank spaces between them	110.3-1.5(C)	1		
11. Systematically examines simple tactile charts and graphs	111.13-1.10(A)	1		
12. Scans entire graphic before answering questions				
a. locates top, bottom, left & right areas of tactile graphic	111.13-1.10(A)	1		
b. tracks along top, bottom, left & right areas of tactile graphic	111.13-1.10(A)	1		
c. traces lines within a graphic	111.13-1.10(A)	1		
B. Reads and interprets graphic materials				
1. Geometric shapes	111.13 - 1.6(A) 111.14 - 2.7(A) 111.15 - 3.8	1 2 3		
2. Calendars	111.12 - K.11(C)	K		
SUBTOTAL				

INTERPRETING AND CREATING TACTILE GRAPHICS	TEKS	Gr. Level	Pre-test Cs	Post-test New Cs
3. Clocks - analog and digital	111.13 - 1.8(B) 111.14 - 2.10(B) 111.15 - 3.12(B) 111.16 - 4.12(B) 111.17 - 5.11(B)	1 2 3 4 5		
4. Thermometers	111.14 - 2.10(A) 111.15 - 3.12(A) 111.16 - 4.12(A) 111.17 - 5.11(A)	2 3 4 5		
5. Rulers	111.15 - 3.11(A) 111.16 - 4.11(A) 111.17 - 5.10(C)	3 4 5		
6. Number lines	111.14 - 2.8 111.15 - 3.10 111.15 - 3.11(A) 111.16 - 4.10	2 3 3 4		
7. Parallel and perpendicular lines	111.16 - 4.8(B) 111.17 - 5.7	4 5		
8. Congruency and symmetry	111.15 - 3.9(ABC) 111.16 - 4.9(BC) 111.17 - 5.7	3 4 5		
9. Angles	111.16 - 4.8(A) 111.22 - 6.6(AB) 111.22 - 6.8(C) 111.23 - 7.6(AB)	4 6 6 7		
10. Translations, rotations, reflections	111.16 - 4.9(A) 111.17 - 5.8(AB)	4 5		
11. Nets	111.23 – 7.8(B) 111.24 – 8.7(A)	7 8		
12. Capacity	111.16 - 4.11(AB)	4		
13. Volume	111.16 - 4.11(CD)	4		
14. Perimeter	111.16 - 4.11(A) 111.17 - 5.10(BC)	4 5		
C. General Usage	See TEKS listed in D. for specific types of tables, charts, and graphs			
1. Demonstrates understanding that box lines can set charts and graphs apart from other text	"	K-8		
2. Reads titles first to gather information	"	K-8		
3. Reads subtitles and understands how they relate to titles	"	K-8		
4. Reads keys	"	K-8		
SUBTOTAL				

INTERPRETING AND CREATING TACTILE GRAPHICS	TEKS	Gr. Level	Pre-test Cs	Post-test New Cs
5. Reads labels	"	K-8		
6. Accurately follows guidelines to read number in tables	"	K-8		
7. Examines all sections of the graphic	"	K-8		
D. Interprets and creates various types of tables, charts and graphs				
1. Tables	111.14 – 2.6(A) 111.15 – 3.7(AB) 111.16 – 4.7 111.17 – 5.5(A) 111.17 – 5.13(AB) 111.22 – 6.4(AB) 111.24 – 8.5(A)			
a. identifies graphic as a table	"	2-8		
b. identifies columns for 2 column table	"	2-8		
c. identifies rows for 2 column table	"	2-8		
d. interprets 2 column table	"	2-8		
e. interprets multi-column tables	"	2-8		
f. creates tables	"	2-8		
2. Tally charts (can include real object graphs and two-dimensional representations)	111.12 – K.12(AB) 111.13 – 1.19(AB) 111.14 – 2.11(AB) 111.15 – 3.13(AB) 111.16 – 4.13(A) 111.17 – 5.13(C)			
a. identifies graphic as tally chart	"	K-5		
b. interprets tally chart	"	K-5		
c. creates tally chart	"	K-5		
3. Pictographs (can include real object graphs and two-dimensional representations)	111.12 – K.12(AB) 111.13 – 1.9(AB) 111.14 – 2.11(AB) 111.15 – 3.13(AB) 111.16 – 4.13(A) 111.17 – 5.13(C)			
a. identifies graphic as pictograph	"	K-5		
b. differentiates between vertical lines and picture symbols	"	K-5		
c. interprets pictograph	"	K-5		
d. creates pictograph	"	K-5		
SUBTOTAL				

INTERPRETING AND CREATING TACTILE GRAPHICS	TEKS	Gr. Level	Pre-test Cs	Post-test New Cs
4. Bar graphs	111.13 – 1.9(B) 111.14 – 2.11(AB) 111.15 – 3.13(AB) 111.16 – 4.13(B) 111.17 – 5.13(C) 111.22 – 6.10(A) 111.23 – 7.11(A) 111.24 – 8.12(C)			
a. identifies graphic as bar graph	"	1-8		
b. recognizes direction of bar graph (horizontal or vertical)	"	1-8		
c. accurately follows guidelines to read number labels	"	1-8		
d. reads values of bars when aligned with a scale number	"	1-8		
e. reads values of bars between braille number labels (when smaller increments may not be labeled)	"	1-8		
f. compares bar lengths	"	1-8		
g. creates bar graphs	"	1-8		
5. circle graphs	111.22 – 6.10(AC) 111.23 – 7.11(AB) 111.24 – 8.12(C)			
a. identifies graphic as circle graph	"	6-8		
b. compares sizes of sections	"	6-8		
c. recognizes fractional parts	"	6-8		
d. relates fractional parts to percents	"	6-8		
e. creates circle graphs	"	6-8		
6. Coordinate grids	111.17 – 5.7 111.22 – 6.7 111.23 – 7.7(AB) 111.24 – 8.6(B) 111.24 - 8.7(D)			
a. identifies graphic as coordinate grid	"	5-8		
b. accurately follows guidelines to read number labels	"	5-8		
c. identifies positive coordinate points	"	5-8		
d. identifies negative coordinate points	"	5-8		
e. counts gridlines with 1-to-1 correspondence	"	5-8		
SUBTOTAL				

INTERPRETING AND CREATING TACTILE GRAPHICS	TEKS	Gr. Level	Pre-test Cs	Post-test New Cs
f. locates (0,0) point (origin)	"	5-8		
g. does not count starting point when identifying or plotting points	"	5-8		
h. locates points using ordered pairs	"	5-8		
i. plots points on a coordinate grid:				
i. one quadrant	"	5-8		
ii. two quadrants	"	5-8		
iii. three quadrants	"	5-8		
iv. four quadrants	"	5-8		
7. Line graphs	111.17 – 5.13(AC) 111.22 – 6.10(AC) 111.23 – 7.11(AB) 111.24 – 8.12(C)			
a. identifies graphic as line graph	"	5-8		
b. interprets data from line graphs	"	5-8		
c. creates line graphs	"	5-8		
8. Venn diagrams	111.23 - 7.11(AB) 111.24 - 8.12(C)			
a. identifies graphic as Venn diagram	"	7-8		
b. interprets data from Venn diagram	"	7-8		
c. creates Venn diagrams	"	7-8		
SUBTOTAL				

Note: Most skills students need for reading tactile graphics have been established by 8th grade. These skills will then be used for higher level courses.

Total of this Skill Area	Pre-test	Post-test
	Cs	New Cs

USING ADAPTIVE TOOLS TO COMPLETE GRADE LEVEL PROBLEMS	TEKS	Gr. Level	Pre-test Cs	Post-test New Cs
A. Selects and uses tools and materials to <i>interpret</i> tactile graphics	<i>Aligns to underlying processes and mathematical tools section of TEKS at all grade levels</i>			
1. Ruler	"	K-8		
2. Straight edge tool	"	K-8		
3. Graph paper	"	K-8		
4. Drawing board	"	K-8		
5. Graphic aid	"	K-8		
6. Compass	"	K-8		
7. Protractor	"	K-8		
8. Tracing wheel	"	K-8		
B. Selects and uses tools and materials to <i>create</i> tactile graphics	<i>Aligns to underlying processes and mathematical tools section of TEKS at all grade levels</i>			
1. Ruler	"	K-8		
2. Compass	"	K-8		
3. Protractor	"	K-8		
4. Graphic aid	"	K-8		
5. Tracing wheel	"	K-8		
6. Straight edge tool	"	K-8		
7. Drawing board	"	K-8		
8. Graph paper	"	K-8		

Note: Most skills students need for interpreting and creating tactile graphics have been established by 8th grade. These skills will then be used for higher level courses.

Total of this Skill Area	Pre-test	Post-test
	Cs	New Cs

Pre-Kindergarten Guidelines

Language Arts

(6) Print and Book Awareness

- understands that reading and writing are ways to obtain information and knowledge, generate and communicate thoughts and ideas, and solve problems
- understands that print carries a message by recognizing labels, signs, and other print forms in the environment
- understands that letters are different from numbers
- understands that illustrations carry meaning but cannot be read
- understands that a book has a title and an author
- begins to understand that print runs from left to right and top to bottom
- begins to understand some basic print conventions (e.g., the concept that letters are grouped to form words and that words are separated by spaces)
- begins to recognize the association between spoken and written words by following the print as it is read aloud
- understands that different text forms are used for different functions (e.g., lists for shopping, recipes for cooking, newspapers for learning about current events, letters and messages for interpersonal communication)

(10) Written Expression

- attempts to write messages as part of playful activity
- uses known letters and approximations of letters to represent written language (especially meaningful words like his/her name and phrases such as “I love you” or [Spanish] “Te quiero”)
- attempts to connect the sounds in a word with its letter forms
- understands that writing is used to communicate ideas and information
- attempts to use a variety of forms of writing (e.g., lists, messages, stories)
- begins to dictate words, phrases, and sentences to an adult recording on paper (e.g., “letter writing,” “story writing”)

Math

(3) Geometry and Spatial Sense

- begins to recognize, describe, and name shapes (e.g., circles, triangles, rectangles—including squares)
- begins to use words that indicate where things are in space (e.g., “beside,” “inside,” “behind,” “above,” “below”)
- begins to recognize when a shape’s position or orientation has changed
- begins to investigate and predict the results of putting together two or more shapes
- puts together puzzles of increasing complexity

(4) Measurement

- covers an area with shapes (e.g., tiles)
- fills a shape with solids or liquids (e.g., ice cubes, water)
- begins to make size comparisons between objects (e.g., taller than, smaller than)

- begins to use tools to imitate measuring
 - begins to categorize time intervals and uses language associated with time in everyday situations (e.g., “in the morning,” “after snack”)
 - begins to order two or three objects by size (seriation) (e.g., largest to smallest) (age 4)
- (5) Classification and Data Collection
- matches objects that are alike
 - describes similarities and differences between objects
 - sorts objects into groups by an attribute and begins to explain how the grouping was done
 - participates in creating and using real and pictorial graphs

Physical Development

- (3) Fine-Motor Development
- begins to develop pincer control in picking up objects (e.g., weaving, touching small objects)
 - begins to practice self-help skills (e.g., zipping, buttoning)
 - begins to hold writing tools with fingers instead of with a fist
 - begins to manipulate play objects that have fine parts
 - begins to use scissors

Texas Essential Knowledge and Skills (TEKS):

Language Arts

Kindergarten

- 110.2 - K.5(B) know that print moves left-to-right across the page and top-to-bottom
- 110.2 - K.14(E) gain increasing control of penmanship such as pencil grip, paper position, and beginning stroke

Grade One

- 110.3 - 1.5(C) understand that written words are separated by spaces
- 110.3 - 1.17(E) gain an increasing control of penmanship such as pencil grip, paper position, stroke, and posture
- 110.3 - 1.23(B) record or dictate his/her own knowledge of a topic in various ways such as by drawing pictures, making lists, and showing connections among ideas

Grade Two

- 110.4 - 2.20(B) record his/her own knowledge of a topic in various ways such as by drawing pictures, making lists, and showing connections among ideas

Grade Three

- 110.5 - 3.15(A) gain more proficient control of all aspects of penmanship

Math

Kindergarten

- 111.12 - K.7(A) describe one object in relation to another using informal language such as over, under, above, and below
- 111.12 - K.7(B) place an object in a specified position
- 111.12 - K.8(A) describe and identify an object by its attributes using informal language
- 111.12 - K.8(C) sort a variety of objects including two- and three-dimensional geometric figures according to their attributes and describe how the objects are sorted
- 111.12 - K.9(C) describe, identify, and compare circles, triangles, rectangles, and squares (a special type of rectangle)
- 111.12 - K.10(A) compare and order two or three concrete objects according to length (longer/shorter than, or the same)
- 111.12 - K.10(B) compare the areas of two flat surfaces of two-dimensional figures (covers more, covers less, or covers the same)
- 111.12 - K.11(C) read a calendar using days, weeks, and months
- 111.12 - K.12(A) construct graphs using real objects or pictures in order to answer questions
- 111.12 - K.12(B) use information from a graph of real objects or pictures in order to answer questions
- 111.12 - K.13(D) use tools such as real objects, manipulatives, and technology to solve problems

Grade One

- 111.13 - 1.6(A) describe and identify two-dimensional geometric figures, including circles, triangles, rectangles, and squares (a special type of rectangle)
- 111.13 - 1.6(B) describe and identify three-dimensional geometric figures, including spheres, rectangular prisms (including cubes), cylinders, and cones
- 111.13 - 1.6(C) describe and identify two- and three-dimensional geometric figures in order to sort them according to a given attribute using informal and formal language
- 111.13 - 1.7(B) compare and order two or more concrete objects according to length (from longest to shortest)
- 111.13 - 1.8(B) read time to the hour and half-hour using analog and digital clocks
- 111.13 - 1.9(A) collect and sort data
- 111.13 - 1.9(B) use organized data to construct real-object graphs, picture graphs, and bar-type graphs
- 111.13 - 1.10(A) draw conclusions and answer questions using information organized in real-object graphs, picture graphs, and bar-type graphs

Grade Two

- 111.14 – 2.6(A) generate a list of paired numbers based on a real-life situation such as number of tricycles related to number of wheels
- 111.14 - 2.7(A) describe attributes (the number of vertices, faces, edges, sides) of two- and three-dimensional geometric figures such as circles, polygons, spheres, cones, cylinders, prisms, and pyramids, etc.
- 111.14 - 2.7(B) use attributes to describe how 2 two-dimensional figures or 2 three-dimensional geometric figures are alike or different
- 111.14 - 2.8 recognize that a line can be used to represent a set of numbers and its properties. The student is expected to use whole numbers to locate and name points on a number line.
- 111.14 - 2.9(A) identify concrete models that approximate standard units of length and use them to measure length
- 111.14 - 2.10(A) read a thermometer to gather data
- 111.14 - 2.10(B) read and write times shown on analog and digital clocks using five-minute increments
- 111.14 - 2.11(A) Construct picture graphs and bar-type graphs
- 111.14 - 2.11(B) draw conclusions and answer questions based on picture graphs and bar-type graphs

Grade Three

- 111.15 – 3.7(A) generate a table of paired numbers based on a real-life situation such as insects and legs
- 111.15 – 3.7(B) identify and describe patterns in a table of related number pairs based on a meaningful problem and extend the table
- 111.15 - 3.8 identify, classify, and describe two- and three-dimensional geometric figures by their attributes. Compare two-dimensional figures, three-dimensional figures, or both by their attributes using formal geometry vocabulary
- 111.15 - 3.9(A) identify congruent two-dimensional figures
- 111.15 - 3.9(B) create two-dimensional figures with lines of symmetry using concrete models and technology
- 111.15 - 3.9(C) identify lines of symmetry in two-dimensional geometric figures
- 111.15 - 3.10 recognizes that a line can be used to represent numbers and fractions and their properties and relationships. The student is expected to locate and name points on a number line using whole numbers and fractions, including halves and fourths

- 111.15 - 3.11(A) use linear measurement tools to estimate and measure lengths using standard units
- 111.15 - 3.12(A) use a thermometer to measure temperature
- 111.15 - 3.12(B) tell and write time shown on analog and digital clocks.
- 111.15 - 3.13(A) collect, organize, record, and display data in pictographs and bar graphs where each picture or cell might represent more than one piece of data
- 111.15 - 3.13(B) interpret information from pictographs and bar graphs

Grade Four

- 111.16 – 4.7 uses organizational structures to analyze and describe patterns and relationships. The student is expected to describe the relationship between two sets of related data such as ordered pairs in a table
- 111.16 - 4.8(A) identify and describe right, acute, and obtuse angles
- 111.16 - 4.8(B) identify and describe parallel and intersecting (including perpendicular) lines using concrete objects and pictorial models
- 111.16 - 4.9(B) use translations, reflections, and rotations to verify that two shapes are congruent
- 111.16 - 4.9(C) use reflections to verify that a shape has symmetry
- 111.16 - 4.10 recognizes the connection between numbers and their properties and points on a line. The student is expected to locate and name points on a number line using whole numbers, fractions such as halves and fourths, and decimals such as tenths
- 111.16 - 4.11(A) estimate and use measurement tools to determine length (including perimeter), area, capacity and weight/mass using standard units SI (metric) and customary
- 111.16 - 4.11(B) perform simple conversions between different units of length, between different units of capacity, and between different units of weight within the customary measurement system
- 111.16 - 4.11(C) use concrete models of standard cubic units to measure volume
- 111.16 - 4.11(D) estimate volume in cubic units
- 111.16 - 4.12(A) use a thermometer to measure temperature and changes in temperature
- 111.16 - 4.12(B) use tools such as a clock with gears or a stopwatch to solve problems involving elapsed time
- 111.16 - 4.13(A) use concrete objects or pictures to make generalizations about determining all possible combinations of a given set of data or of objects in a problem situation
- 111.16 - 4.13(B) interpret bar graphs

Grade Five

- 111.17 – 5.5(A) describe the relationship between sets of data in graphic organizers such as lists, tables, charts, and diagrams
- 111.17 - 5.7 the student generates geometric definitions using critical attributes. The student is expected to identify essential attributes including parallel, perpendicular, and congruent parts of two- and three-dimensional geometric figures
- 111.17 - 5.10(B) connect models for perimeter, area, and volume with their respective formulas
- 111.17 - 5.10(C) select and use appropriate units and formulas to measure length, perimeter, area, and volume
- 111.17 - 5.11(A) solve problems involving changes in temperature
- 111.17 - 5.11(B) solve problems involving elapsed time
- 111.17 – 5.13(A) use tables of related number pairs to make line graphs
- 111.17 – 5.13(B) describe characteristics of data presented in tables and graphs including median, mode, and range
- 111.17 – 5.13(C) graph a given set of data using an appropriate graphical representation such as a picture or line graph
- 111.17 - 5.13(C) graph a given set of data using an appropriate graphical representation such as a picture or line graph

Grade Six

- 111.22 – 6.4(A) use tables and symbols to represent and describe proportional and other relationships such as those involving conversions, arithmetic sequences (with a constant rate of change), perimeter and area
- 111.22 – 6.4(B) use tables of data to generate formulas representing relationships involving perimeter, area, volume of a rectangular prism, etc.
- 111.22 - 6.6(A) use angle measurements to classify angles as acute, obtuse, or right
- 111.22 - 6.6(B) identify relationships involving angles in triangles and quadrilaterals
- 111.22 - 6.7 uses coordinate geometry to identify location in two dimensions. The student is expected to locate and name points on a coordinate plane using ordered pairs of non-negative rational numbers
- 111.22 - 6.8(C) measure angles
- 111.22 - 6.10(A) select and use an appropriate representation for presenting and displaying different graphical representations of the same data including line plot, line graph, bar graph, and stem and leaf plot
- 111.22 - 6.10(C) sketch circle graphs to display data

Grade Seven

- 111.23 - 7.6(A) use angle measurements to classify pairs of angles as complementary or supplementary
- 111.23 - 7.6(B) use properties to classify triangles and quadrilaterals
- 111.23 - 7.7(A) locate and name points on a coordinate plane using ordered pairs of integers
- 111.23 - 7.7(B) graph reflections across the horizontal or vertical axis and graph translations on a coordinate plane
- 111.23 - 7.8(B) make a net (two-dimensional model) of the surface area of a three-dimensional figure
- 111.23 - 7.11(A) select and use an appropriate representation for presenting and displaying relationships among collected data, including line plot, line graph, bar graph, stem and leaf plot, circle graph, and Venn diagrams, and justify the selection
- 111.23 - 7.11(B) make inferences and convincing arguments based on an analysis of given or collected data

Grade Eight

- 111.24 – 8.5(A) predict, find, and justify solutions to application problems using appropriate tables, graphs, and algebraic equations
- 111.24 - 8.6(B) graph dilations, reflections, and translations on a coordinate plane
- 111.24 - 8.7(A) draw three-dimensional figures from different perspectives
- 111.24 - 8.7(D) locate and name points on a coordinate plane using ordered pairs of rational numbers
- 111.24 - 8.12(C) select and use an appropriate representation for presenting and displaying relationships among collected data, including line plots, line graphs, stem and leaf plots, circle graphs, bar graphs, box and whisker plots, histograms, and Venn diagrams, with and without the use of technology

Underlying Processes and Mathematical Tools**Kindergarten**

- 111.12 - K.13(D) use tools such as real objects, manipulatives, and technology to solve problems

Grade One

- 111.13 - 1.11(D) use tools such as real objects, manipulatives, and technology to solve problems

Grade Two

- 111.14 - 2.12(D) use tools such as real objects, manipulatives, and technology to solve problems

Grade Three

- 111.15 - 3.14(D) use tools such as real objects, manipulatives, and technology to solve problems

Grade Four

111.16 - 4.14(D) use tools such as real objects, manipulatives, and technology to solve problems

Grade Five

111.17 - 5.14(D) use tools such as real objects, manipulatives, and technology to solve problems

Grade Six

111.22 - 6.11(D) select tools such as real objects, manipulatives, paper/pencil, and technology or techniques such as mental math, estimation, and number sense to solve problems

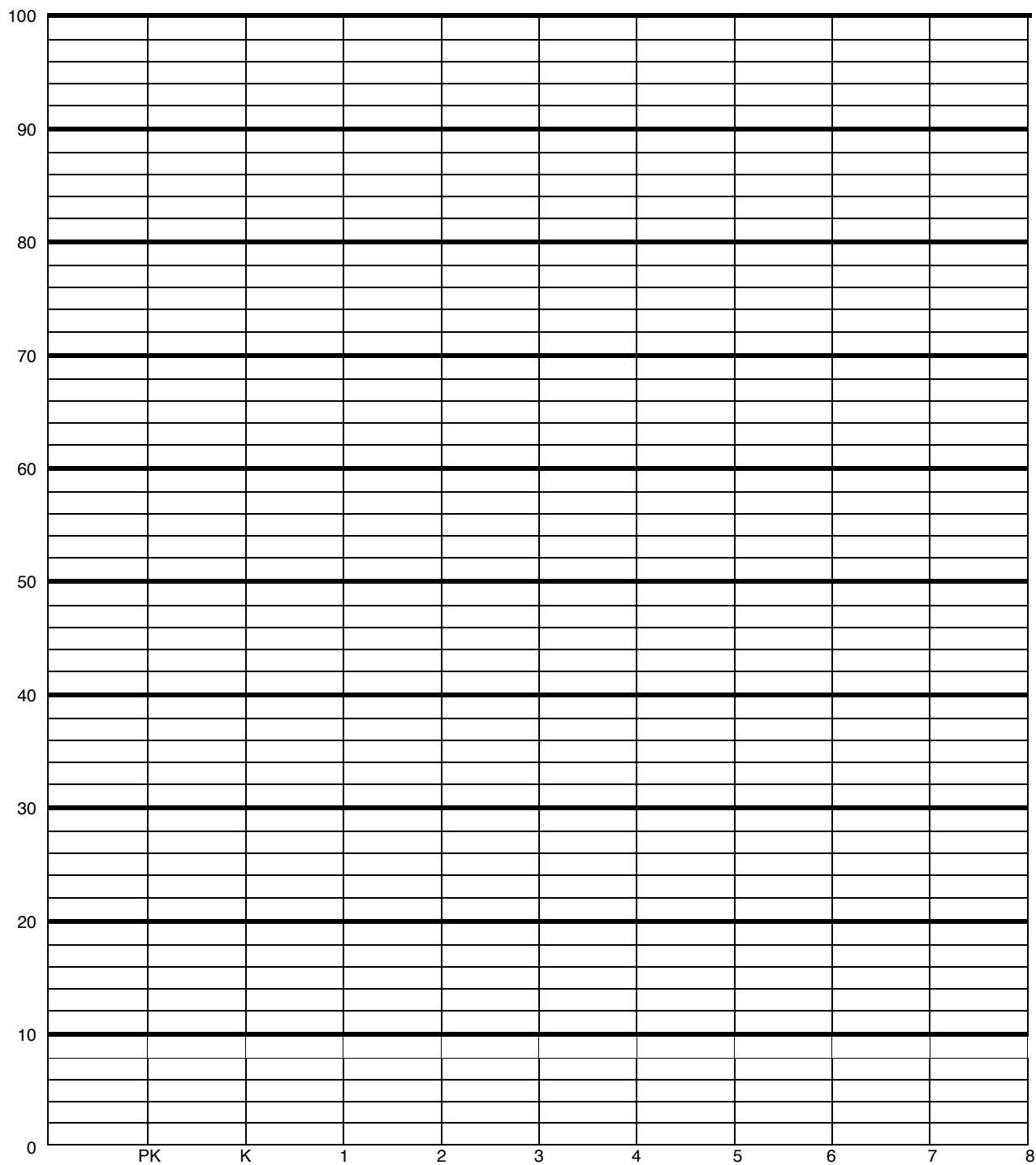
Grade Seven

111.23 - 7.13(D) select tools such as real objects, manipulatives, paper/pencil, and technology or techniques such as mental math, estimation, and number sense to solve problems

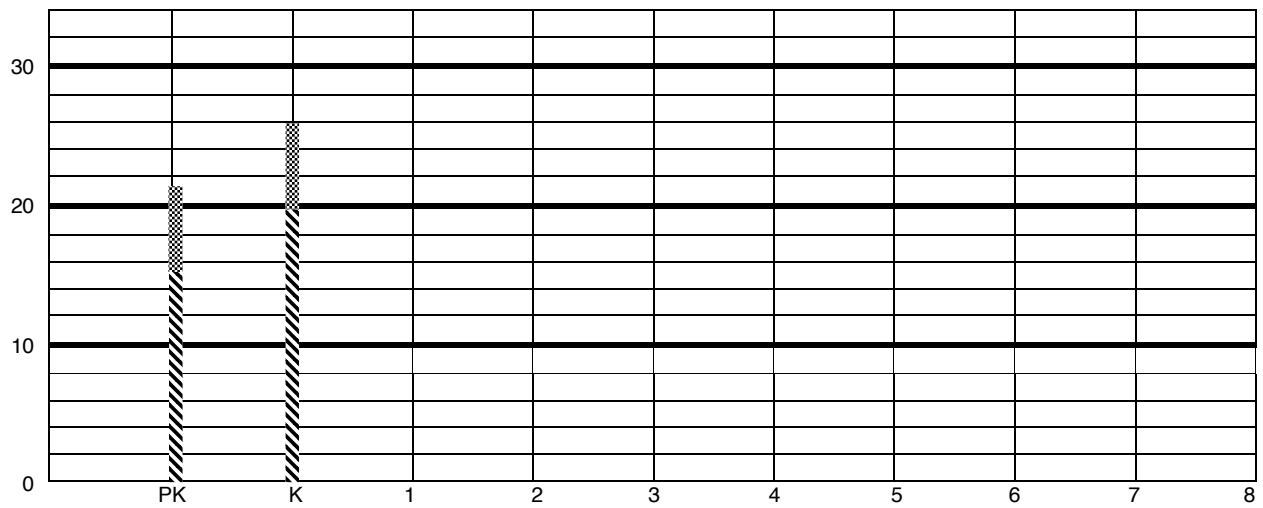
Grade Eight

111.24 - 8.14(D) select tools such as real objects, manipulatives, paper/pencil, and technology or techniques such as mental math, estimation, and number sense to solve problems

Student Name: _____



Directions: Using two different colored markers, graph the student's progress from Grade Level to Grade Level - Pre-test to Post-test. See example on the next page.



Example

Pre-Test: 15 **Cs** at Pre-Kindergarten Level
 21 **Cs** at Kindergarten Level

Post-Test: 6 **New Cs** at Pre-Kindergarten Level
 6 **New Cs** at Kindergarten Level

