

PRIME FACTORIZATION

One skill, start to finish: the IEP goal, six probe forms, the graph. Untimed. Fillable PDF.

PRIME FACTORIZATION Prime Factorization — Goal and Directions

Goal, baseline, directions and benchmarks for one skill. Untimed; score is prime factorizations correct out of 10.

Ten composite numbers per form, 4 to 100, and the student writes each one's complete prime factorization: the prime factors multiplied together, with a small raised exponent for a factor that repeats ($2 \times 2 \times 3$ is written $2^2 \times 3$). The expanded form with no exponent is equally correct. One item a form is a single prime raised to a power (one distinct prime factor), the other nine have two or three different prime factors, the same split every form, so a score of 7 of 10 means the same thing on every form.

Sample goal — invented; edit every bracket to fit the student:
By [annual review date], when given 10 composite numbers from 4 to 100, [Student] will write the correct complete prime factorization for [8 of 10] numbers on [3] consecutive weekly probes, as measured by teacher-scored prime factorization probes.

BY (DATE) _____ CRITERION (SCORE OUT OF 10, OR PERCENT) _____

GIVEN (CONDITION: WHAT IS SHOWN, ANY ALLOWED SUPPORT) _____ ON _____ OF _____ CONSECUTIVE PROBES _____

STUDENT WILL (THE BEHAVIOR, IN THE WORDS OF THE PROBE) _____ AS MEASURED BY (THIS PROBE: PRIME FACTORIZATION, FORMS A-F, PAGE 6-11) _____

Baseline: give Forms A, B and C on three days and take the middle score

BASLINE PROBE 1	BASLINE PROBE 2	BASLINE PROBE 3	MEDIAN (THE BASLINE)

Benchmarks toward the goal

BENCHMARK	TARGET DATE	TARGET SCORE	ACTUAL SCORE	MEET?

Giving and scoring the probe

☐ *Yes: "Read each number down into its prime factors. Multiply the prime factors together to write each one out. If a*

My name: _____ Date: _____

Break each number into its prime factors. Write them multiplied together.

BREAK EACH NUMBER INTO ITS PRIME FACTORS. WRITE IT IN THE BOX

- Write the prime factorization of 35.
- Write the prime factorization of 99.
- Write the prime factorization of 65.
- Write the prime factorization of 46.
- Write the prime factorization of 66.
- Write the prime factorization of 75.
- Write the prime factorization of 84.
- Write the prime factorization of 93.

PRIME FACTORIZATION Prime Factorization — Data Log and Graph

One row per probe. Three points in a row under the aim line is a decision, not a feeling; change the teaching and write what changed in the notes.

STUDENT _____ CRITERION / AIM _____ GOAL DATE _____

CORRECT OUT OF 10 : DRAW THE AIM LINE FROM THE BASELINE TO THE CRITERION FIRST, THEN PLOT EACH WEEK

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

Probe (week)

#	DATE	FORM	CORRECT	ERRORS	SCORE USED ON GRAPH	NOTES (CONDITIONS, WHAT WAS RETEACHED)

PRIME FACTORIZATION Prime Factorization — Caseload Summary

Every student on this goal, on one grid. Twelve rows, eight probes, one decision column.

TEACHER / CASE MANAGER _____ SKILL (AS THE GOAL WORDS IT) _____ MARKING PERIOD _____

STUDENT	BASLINE	CRITERION	P1	P2	P3	P4	P5	P6	P7	P8	TREND	DECISION THIS MONTH

How to fill it:

- One row per student who has a goal on this skill.
- Baseline is the median of the first three probes.
- One column per weekly probe; write the score out of 10, not a percent, as the rows compare.

What it is for:

- Grouping: When six students sit on the same goal, the individual graphs answer "how is this child doing?" and nothing answers "who needs the same fifteen minutes." Rows that are flat together are a

EXAMPLE A Filled-In Data Log (Invented Student)

Darius is invented. Twelve weekly probes on prime factorization, the aim line, the change that three low points forced, and the criterion being met.

The goal, as written for Darius, fifth grade (invented)
By May 20, when given 10 composite numbers from 4 to 100, Darius will write the correct complete prime factorization for 8 of 10 numbers on 3 consecutive weekly probes, as measured by teacher-scored prime factorization probes (forms A-F).

#	DATE	FORM	CORRECT	ERRORS	GRAPHED	NOTES
1	9/9	A	3	7	3	baseline
2	9/9	B	4	6	4	baseline
3	9/10	C	3	7	3	baseline (median of 3, 4, 3 = 3)
4	9/17	D	2	8	2	stopped factoring as soon as two factors multiplied back to the original number, writing 4×15 instead of continuing until every factor was prime.
5	9/24	E	3	7	3	same pattern
6	10/1	F	2	8	2	3 under aim line added a check stop, circle each factor and ask whether it is itself prime before stopping.
7	10/8	A	5	5	5	—
8	10/15	B	6	4	6	—
9	10/22	C	7	3	7	errors narrowing to one pattern
10	10/29	D	8	2	8	criterion met, 1 of 3
11	11/5	E	8	2	8	criterion met, 2 of 3
12	11/12	F	8	2	8	criterion met, 3 of 3 — goal met

How to read the log

- Baseline was the median of three forms on three days: 3, 4, 3, so 3. Not the average, not the best.
- The aim line runs from 3 in week 1 to 8 at the goal date. Probes 4, 5 and 6 (2, 3, 2) sat under it: three in a row, so the teaching changed and the change is written on the row.
- The notes name the pattern, not just the count: "stopped factoring as soon as two factors multiplied back to the original number, writing 4×15 instead of continuing until every factor was prime," what sent the teaching

PROGRESS MONITORING How This Pack Works

Goal, baseline, weekly probe, graph, decision. Six steps, one skill.

A progress monitoring goal needs a thing to count and a page to count it on. This file is both, for one skill: a goal written in the probe's own words, 6 equivalent forms of the probe that measures it, and a graph scaled to it. Nothing has to be built or found.

- Baseline.** Give Forms A, B and C on three different days. The middle score of the three is the baseline; write it on the goal page.
- Write the goal** from the six-part frame on the goal page. Start from the sample and change every bracket: the date, the condition, the criterion, the number of probes.
- Probe once a week** with the forms in rotation (A, B, C, D, E, F, A...). Never the same form two weeks running. Every form is ten items, untimed. Score it against the answer key (pages 16-17).
- Log and plot** the score the same day. Draw the aim line first, from the baseline on the left to the criterion at the goal date on the right; then plot each week's dot.
- Decide from the graph.** Three dots in a row under the aim line: change the teaching this week and write the change on the log. Three in a row over it: raise the target.
- Report from the log.** The log gives the progress report its numbers: baseline, the last two scores, and what the errors keep landing on.

The weekly routine, about five minutes

- ☐ Monday: pull the next form in the rotation (A, B, C, D, E, F, A...).
- ☐ Any day: give the probe one-to-one, untimed; ten items takes a few minutes.
- ☐ Same day: score it, log the row, plot the point, look at the last three points.
- ☐ Friday: if three points sit under the aim line, write the change you are making on the log.

Print and prep

- ☐ Print one copy per student per week: the student writes on the form and that same sheet is the one you score.
- ☐ The forms are student sheets with nothing on them but the problems. The answer key and the Correct... / 10 box for every form are on pages 16 and 17; score there, then log it.
- ☐ Keep the goal page and the graph page for each student at the front of the data folder; type into them or write on them.
- ☐ The caseload page is one grid for every student on this goal; print it once a month.

Goal, baseline, weekly probe, graph, decision. Six steps, one skill.

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- 5 **Decide from the graph.** Three dots in a row under the aim line: change the teaching this week and write the change on the log. Three in a row over it: raise the target.
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- ☐ Monday: pull the next form in the rotation (A, B, C, D, E, F, A...).
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What this probe is not

It is not a norm-referenced test and it carries no benchmark score. The sample goal uses invented criteria in brackets; your team sets the real ones from the baseline and the student's IEP. Every form is untimed and ten items long, so a score of 8 means the same thing on every form, and a student is never scored on speed.

Equivalent forms, and why it matters

Every form has ten composite numbers, one a single prime power and nine with two or three different prime factors, the same split every form; no number repeats across the six forms. A score on one form means the same as a score on another, so the line on the graph is the student, not the paper. Rotate the forms and the page cannot be memorized.

Prime Factorization — Goal and Directions

Goal, baseline, directions and benchmarks for one skill. Untimed; score is prime factorizations correct out of 10.

Ten composite numbers per form, 4 to 100. The student writes each number's prime factorization: the prime factors multiplied together, with a small raised exponent for a repeated factor ($2 \times 2 \times 3$ is written 2 to the 2nd power $\times 3$) — the expanded form is equally correct. One item a form is a single prime power; the other nine have two or three different prime factors, the same split every form.

Sample goal — invented; edit every bracket to fit the student

By [annual review date], when given 10 composite numbers from 4 to 100, [Student] will write the correct complete prime factorization for [8 of 10] numbers on [3] consecutive weekly probes, as measured by teacher-scored prime factorization probes.

BY (DATE)

CRITERION (SCORE OUT OF 10, OR PERCENT)

GIVEN (CONDITION: WHAT IS SHOWN, ANY ALLOWED SUPPORT)

ON ____ OF ____ CONSECUTIVE PROBES

STUDENT WILL (THE BEHAVIOR, IN THE WORDS OF THE PROBE)

AS MEASURED BY (THIS PROBE: PRIME FACTORIZATION, FORMS A–F, PAGE 6–11)

Baseline: give Forms A, B and C on three days and take the middle score

BASELINE PROBE 1	BASELINE PROBE 2	BASELINE PROBE 3	MEDIAN (THE BASELINE)

Benchmarks toward the goal

BENCHMARK	TARGET DATE	TARGET SCORE	ACTUAL SCORE	MET?

Giving and scoring the probe

- ☐ Say: "Break each number into its prime factors. Multiply them together to write your answer."
- ☐ Correct: the complete set of prime factors, shown the right number of times; order does not matter.
- ☐ The expanded form and the exponent form ($2 \times 2 \times 3$, or 2 to the 2nd power $\times 3$) are both correct.
- ☐ Untimed. Let the student finish all ten.

Scoring rules for this student (accepted answers, reversals, supports allowed)

.....

.....

What the errors say to reteach (carry over from the log)

.....

.....

My name: _____

Date: _____



Break each number into its prime factors. Write them multiplied together.

BREAK EACH NUMBER INTO ITS PRIME FACTORS · WRITE IT IN THE BOX

1. Write the prime factorization of **35**.

2. Write the prime factorization of **99**.

3. Write the prime factorization of **65**.

4. Write the prime factorization of **46**.

5. Write the prime factorization of **66**.

6. Write the prime factorization of **75**.

7. Write the prime factorization of **84**.

8. Write the prime factorization of **93**.

9. Write the prime factorization of **32**.

10. Write the prime factorization of **72**.

My name: _____

Date: _____



Break each number into its prime factors. Write them multiplied together.

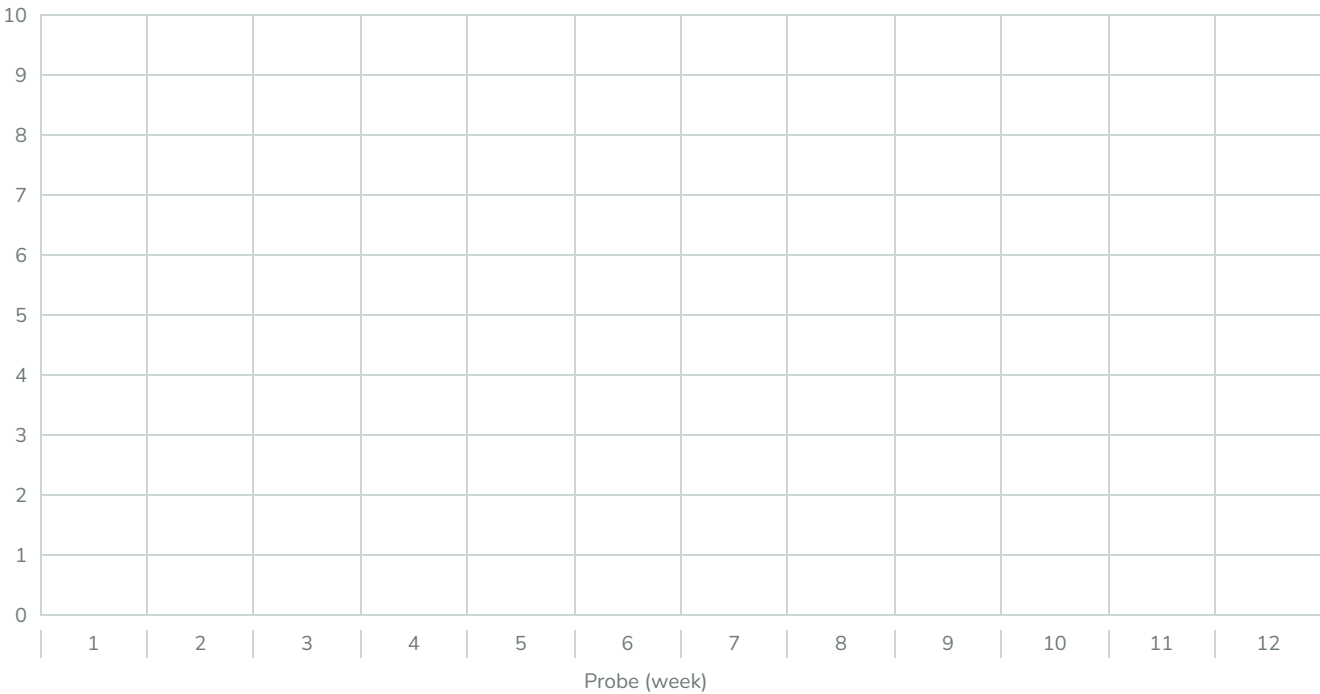
BREAK EACH NUMBER INTO ITS PRIME FACTORS · WRITE IT IN THE BOX

1. Write the prime factorization of **39**.2. Write the prime factorization of **68**.3. Write the prime factorization of **45**.4. Write the prime factorization of **38**.5. Write the prime factorization of **100**.6. Write the prime factorization of **96**.7. Write the prime factorization of **27**.8. Write the prime factorization of **26**.9. Write the prime factorization of **10**.10. Write the prime factorization of **50**.

One row per probe. Three points in a row under the aim line is a decision, not a feeling: change the teaching and write what changed in the notes.

STUDENT	CRITERION / AIM	GOAL DATE

CORRECT OUT OF 10 · DRAW THE AIM LINE FROM THE BASELINE TO THE CRITERION FIRST, THEN PLOT EACH WEEK



#	DATE	FORM	CORRECT	ERRORS	SCORE USED ON GRAPH	NOTES (CONDITIONS, WHAT WAS RETEACHED)

Prime Factorization – Caseload Summary

Every student on this goal, on one grid. Twelve rows, eight probes, one decision column.

MARKING PERIOD

[illegible]

How to fill it

- ☐ One row per student who has a goal on this skill. Baseline is the median of the first three probes.
- ☐ One column per weekly probe; write the score out of 10, not a percent, so the rows compare.
- ☐ Trend: up, flat or down over the last four probes. That word, not the last score, is what the decision follows.
- ☐ Decision: keep going, change the teaching, or raise the target. A blank decision on a flat row is the thing this page exists to catch.

What it is for

Grouping. When six students sit on the same goal, the individual graphs answer “how is this child doing” and nothing answers “who needs the same fifteen minutes.” Rows that are flat together are a group; a row that is flat alone is a different question. Take this page to the data meeting instead of ten folders.

EXAMPLE

A Filled-In Data Log (Invented Student)

Darius is invented. Twelve weekly probes on prime factorization, the aim line, the change that three low points forced, and the criterion being met.

The goal, as written for Darius, fifth grade (invented)

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5	9/24	E	3	7	3	same pattern
6	10/1	F	2	8	2	3 under aim line: added a check step: circle each factor and ask whether it is itself prime before stopping
7	10/8	A	5	5	5	–
8	10/15	B	6	4	6	–
9	10/22	C	7	3	7	errors narrowing to one pattern
10	10/29	D	8	2	8	criterion met, 1 of 3
11	11/5	E	8	2	8	criterion met, 2 of 3
12	11/12	F	8	2	8	criterion met, 3 of 3 — goal met

How to read the log

- ☐ Baseline was the median of three forms on three days: 3, 4, 3, so 3. Not the average, not the best.
- ☐ The aim line runs from 3 in week 1 to 8 at the goal date. Probes 4, 5 and 6 (2, 3, 2) sat under it: three in a row, so the teaching changed and the change is written on the row.
- ☐ The notes name the pattern, not just the count: “stopped factoring as soon as two factors multiplied back to the original number, writing 4×15 instead of continuing until every factor was prime” is what sent the teaching somewhere specific, and a score on its own would not have said that.
- ☐ Criterion was met on probes 10, 11 and 12 — three in a row at 8 of 10 or better — so the goal was already met by probe 12, not merely approached.

The progress report sentence this log produces

“On weekly prime factorization probes (10 items, untimed), Darius scored 3 of 10 at baseline in September and met the goal of 8 of 10 on three consecutive probes by 11/12.” Every number in it is on the log above; nothing is from memory.