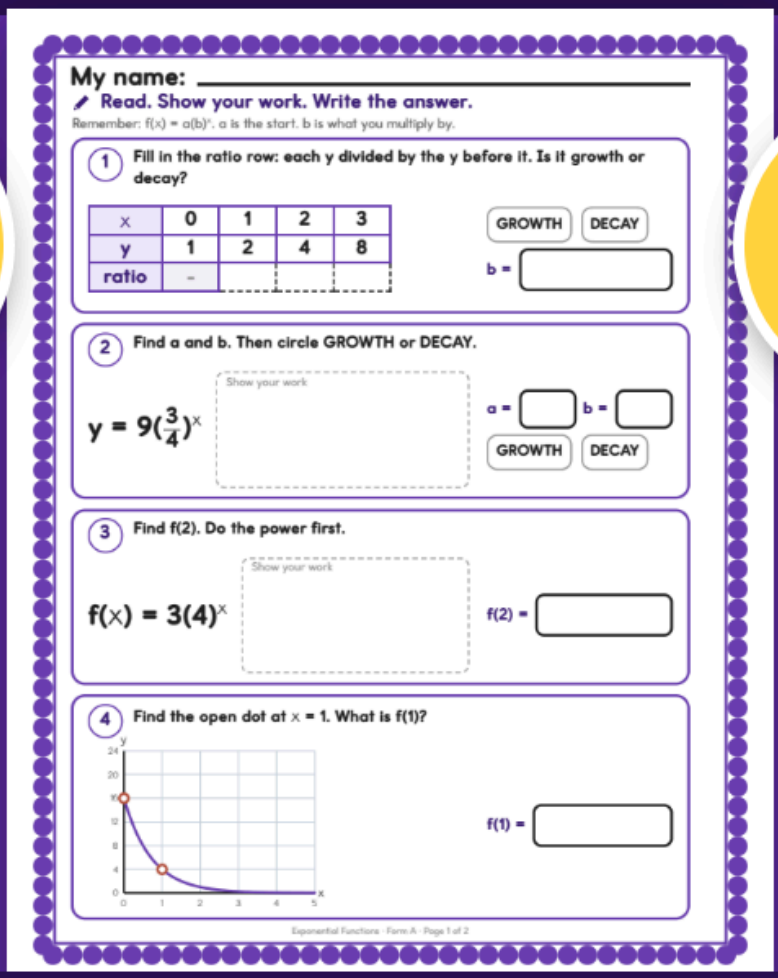
EXPONENTIAL FUNCTIONS

PROGRESS MONITORING PROBES

4 FORMS

GR. 8-10


My name: _____

Read. Show your work. Write the answer.

Remember: $f(x) = a(b)^x$. a is the start. b is what you multiply by.

1. Fill in the ratio row: each y divided by the y before it. Is it growth or decay?

x	0	1	2	3
y	1	2	4	8
ratio	-			

GROWTH DECAY

b = ____

2. Find a and b. Then circle GROWTH or DECAY.

$y = 9(\frac{3}{4})^x$

Show your work

a = ____ b = ____

GROWTH DECAY

3. Find f(2). Do the power first.

$f(x) = 3(4)^x$

Show your work

f(2) = ____

4. Find the open dot at x = 1. What is f(1)?

f(1) = ____

Exponential Functions · Form A · Page 1 of 2



BRIGHT PATH SPED

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This is a fillable PDF

- Open it in a PDF reader (Adobe Acrobat Reader, Preview, or your browser), click into a line or box, type, and Save As once per student.
- Print one copy of both pages of a form per student per week: the student writes on the form and that same sheet is the one you score.
- It works offline. No account, no subscription, no internet connection needed after you download it.

Student data

Completed pages carry a real student's name and scores. Store, hand over and destroy this file the same way you would any other student record.

Need help?

If a field will not behave, a page will not print the way you expect, or anything here looks wrong, use Ask a Question on the product page before leaving a review. Every question is read, and a fix to the file ships as a free update — re-download it any time from My Purchases.

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PREVIEW

Binder Cover, Spine Label & Divider Tabs

A binder cover, six divider tabs, and a short setup list.

Binder cover & spine label

Student _____ Case manager _____ School year _____

Goal start date _____ Next review date _____

Cut along the outer edge and use as a binder cover, a folder label, or a clipboard cover for this student's probe folder.

Divider tabs — print and cut

01 Start Here
The six-step routine, one page.

02 The Goal
The written goal, directions, and where forms A–D fit.

03 Probe Forms
The 4 rotating forms, two pages each, one form per week.

04 Graph & Decision
The aim line, the weekly plot, the three-in-a-row rule.

05 Caseload Summary
Every student on this goal, one grid, once a month.

06 Family Update
The note home and the handoff sheet, ready to fill in.

PREVIEW

Before the first probe

- Write the goal from the sample and change every bracket for this student.
- Give the baseline: three forms, three different days, before the first plotted point.
- Share the rotation (A, B, C, D) with anyone else who might give a form.

Giving and Scoring the Probe

The same way every week, so a change in the score is a change in the student.

Giving the probe

- Say: "Read each problem. Show your work in the box. Write your answers in the answer boxes."
- Correct: every answer box on the problem is right and legible. Problems with more than one answer box (a table, an a and b, a growth or decay circle) are right only when every part is. Your team decides whether partial credit counts and whether the work box is scored. Write that rule on the line below before the baseline.
- Note which kind of problem each miss falls on (the key names it): table, equation to read, equation to evaluate or graph.
- Untimed. Let the student finish all eight.

What is on every form

- Two student pages, four problems a page, 8 problems in all.
- Two tables, two equations to read, two equations to evaluate and two graphs, in the same places on every form.
- Four problems are growth and four are decay, in a different order on each form.
- b is what the function multiplies by each time. Growth: b is more than 1. Decay: b is between 0 and 1.

Tables

Problems 1, 5 on every form. x runs 0, 1, 2, 3. The student divides each y by the y before it. Problem 1 gives a ratio row to fill in; problem 5 asks for b and one missing y.

Equations to read

Problems 2, 6. In $f(x) = a(b)^x$ the student writes a, the start, and b, the number multiplied each time, then circles GROWTH or DECAY.

Equations to evaluate

Problems 3, 7. Put the number in for x and find f. Every answer is a whole number. The power comes first, then the multiplication by a.

Graphs

Problems 4, 8. A curve with open dots on the gridline crossings it passes through. One asks for f(n) at a dot; one asks GROWTH or DECAY and a, the y value when x is 0.

If the student needs the problems read aloud, or other help

Follow the supports in the student's IEP, give them the same way each week, and write them on the goal page so the next person gives the probe the same way.

Notes for whoever gives the probe next (the seat, the supports, anything that helps)

PREVIEW

Preview · Bright Path Shed

My name: _____

Read. Show your work. Write the answer.

Remember: $f(x) = a(b)^x$. a is the start. b is what you multiply by.

1 **Fill in the ratio row: each y divided by the y before it. Is it growth or decay?**

x	0	1	2	3
y	1	2	4	8
ratio	-			

GROWTH DECAY

b = _____

2 **Find a and b. Then circle GROWTH or DECAY.**

$y = 9(\frac{3}{4})^x$

Show your work

a = _____ b = _____

GROWTH DECAY

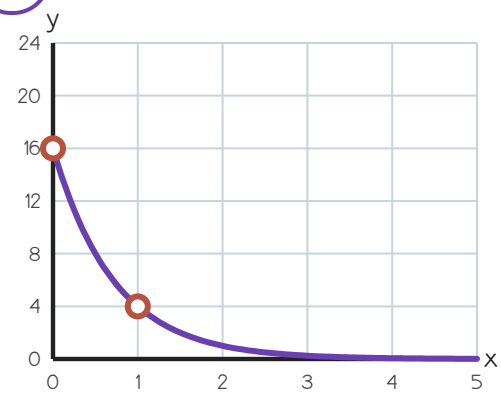
3 **Find f(2). Do the power first.**

$f(x) = 3(4)^x$

Show your work

f(2) = _____

4 **Find the open dot at x = 1. What is f(1)?**



f(1) = _____

PREVIEW

Preview · Bright Path Shed

My name: _____

Read. Show your work. Write the answer.

Remember: $f(x) = a(b)^x$. a is the start. b is what you multiply by.

5 Each y is multiplied by the same b. Find b. Then write the missing y.

x	0	1	2	3
y	54	18	6	

b = ____

Missing y = ____

6 Find a and b. Then circle GROWTH or DECAY.

$f(x) = 12(0.9)^x$

Show your work

a = ____ b = ____

GROWTH DECAY

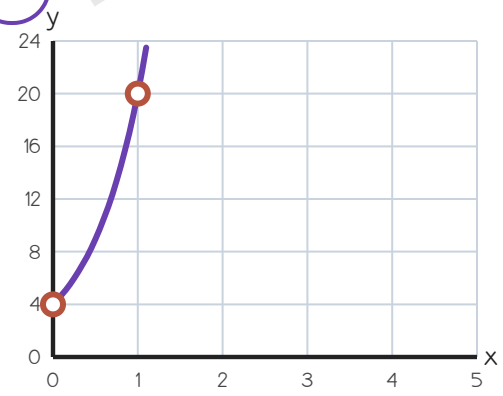
7 Find f(3). Do the power first.

$f(x) = 6(2)^x$

Show your work

f(3) = ____

8 Growth or decay? Circle one. Then find a: y when x = 0.



GROWTH DECAY

a = ____

Color a star when you finish!

PREVIEW

Preview - Bright Path Shed

My name: _____

Read. Show your work. Write the answer.

Remember: $f(x) = a(b)^x$. a is the start. b is what you multiply by.

5 Each y is multiplied by the same b. Find b. Then write the missing y.

x	0	1	2	3
y	3	6		24

b = ____

Missing y = ____

6 Find a and b. Then circle GROWTH or DECAY.

$y = 3(0.8)^x$

Show your work

a = ____ b = ____

GROWTH DECAY

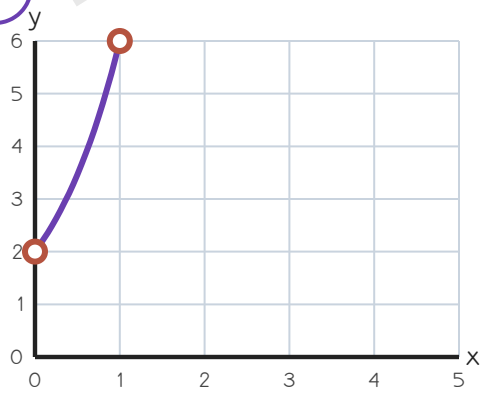
7 Find f(4). Do the power first.

$f(x) = 48(\frac{3}{2})^x$

Show your work

f(4) = ____

8 Growth or decay? Circle one. Then find a: y when x = 0.



GROWTH DECAY

a = ____

Color a star when you finish!

PREVIEW

Preview Bright Path Shed

My name: _____

Read. Show your work. Write the answer.

Remember: $f(x) = a(b)^x$. a is the start. b is what you multiply by.

5 **Each y is multiplied by the same b. Find b. Then write the missing y.**

x	0	1	2	3
y	2	4	8	

b = ☐

Missing y = ☐

6 **Find a and b. Then circle GROWTH or DECAY.**

$f(x) = 5(1.05)^x$

Show your work

a = ☐ b = ☐

GROWTH DECAY

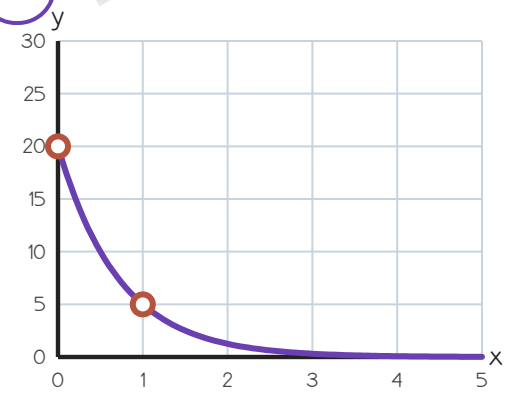
7 **Find f(2). Do the power first.**

$f(x) = 18(\frac{1}{3})^x$

Show your work

f(2) = ☐

8 **Growth or decay? Circle one. Then find a: y when x = 0.**



GROWTH DECAY

a = ☐

Color a star when you finish!

PREVIEW

Teacher Notes - Reading the Misses

Which kind of problem is missed, and what the work box shows, tells you what to teach next.

What this probe measures

- Whether a student can tell growth from decay and read a and b from a table, an equation or a graph, and can find f(n) from an equation $f(x) = a(b)^x$.
- It is a quick weekly check against a goal you write. It is not a norm-referenced test and carries no benchmark score.

b read as an amount to add

- On a table like 4, 8, 16, 32 the student sees the gaps (+4, +8, +16) or says b is the difference.
- Teach the question: what is each y multiplied by to get the next y? The ratio row on problem 1 is there for this; fade it and write what you changed on the log.

Multiplying a and b first

- For $f(x) = 3(2)^x$, find f(3): the power comes first, $2^3 = 8$, then $3 \times 8 = 24$.
- A student who does $(3 \times 2)^3$ gets 216; one who multiplies $3 \times 2 \times 3$ gets 18. Both miss the power.

Misses that cluster on one kind of problem

- Tables are problems 1, 5; equations to read are 2, 6; equations to evaluate are 3, 7; graphs are 4, 8. These positions are the same on all four forms.
- Several misses on one kind across two forms: teach that kind with a worked example before more probes.
- Misses on every kind point to the habit of multiplying by the same number each time, not the format.

Graphs: reading the wrong axis

- The scale changes from graph to graph: one gridline is worth 1, 2, 5, 10 or more. Check that the student reads the labels on the y-axis and not just counts lines.

Graph-it page (page 19): what the two panels show

- Panel A: $f(x) = 4(2)^x$. The table points are (0, 4), (1, 8), (2, 16), (3, 32); each y is multiplied by 2, so it is growth.
- Panel B: $f(x) = 32(1/2)^x$. The table points are (0, 32), (1, 16), (2, 8), (3, 4); each y is multiplied by 1/2, so it is decay.

The student cannot start

- Do the first problem together, aloud, and let the student do the second. Fade the help and write what you changed on the log.

This student's scoring rules and notes

PREVIEW

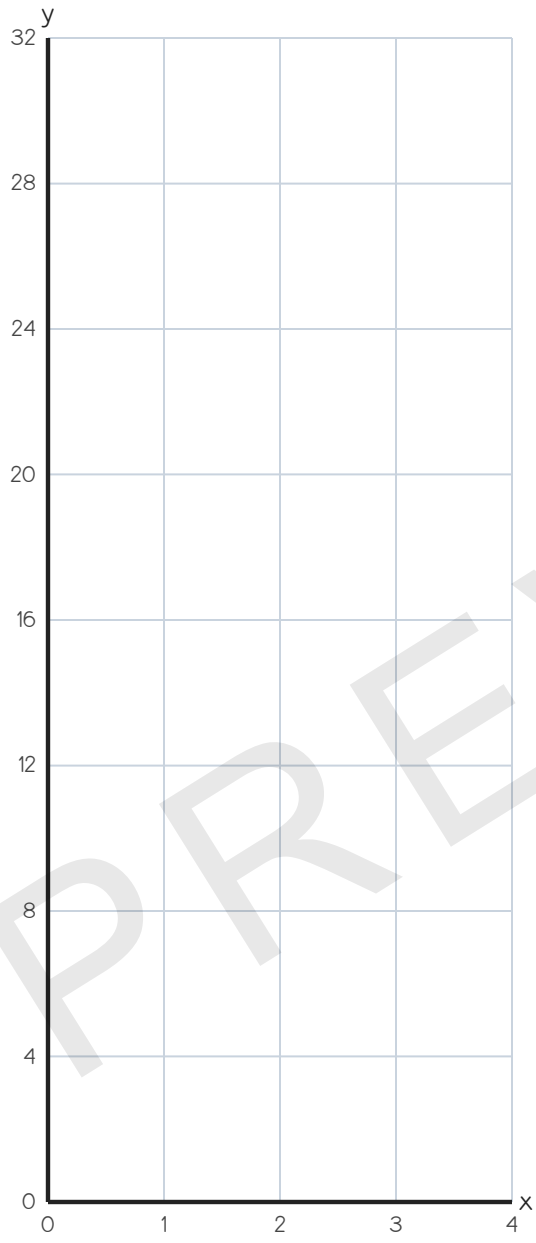
Preview - Bright Path Shed

My name: _____

Plot the points. Draw the curve.

A. Plot this table

x	0	1	2	3
y	4	8	16	32

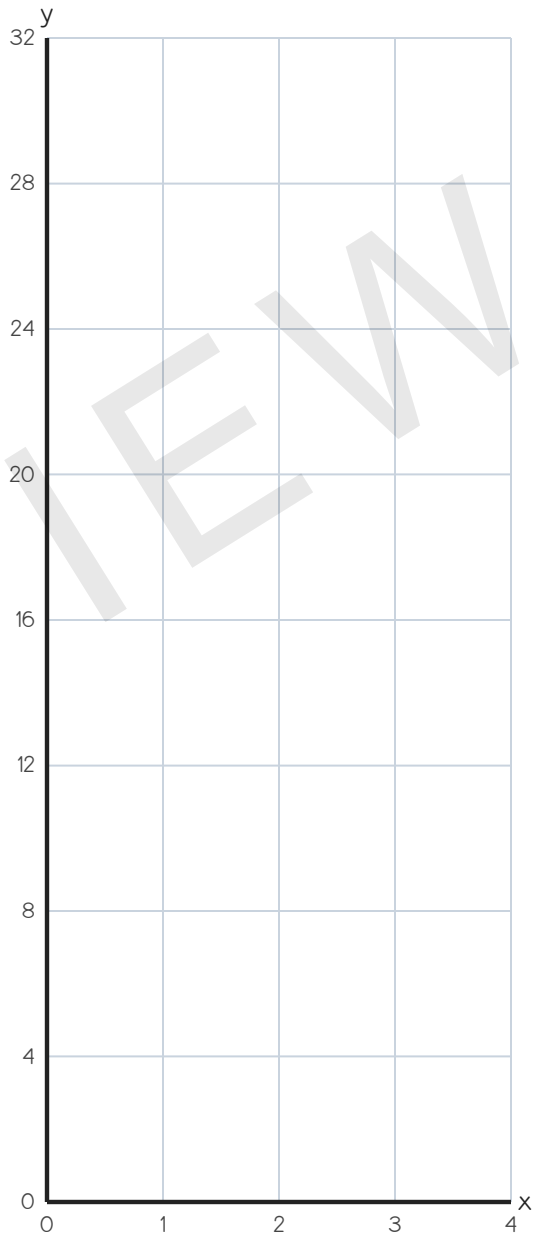


GROWTH DECAY

b = ____

B. Plot this table

x	0	1	2	3
y	32	16	8	4



GROWTH DECAY

b = ____

PREVIEW

Exponential Functions - Caseload Summary

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

Teacher / case manager _____ Skill _____ Marking period _____

Student	Base	Crit	P1	P2	P3	P4	P5	P6	P7	P8	Trend	Decision

How to fill it

- One row per student on this skill. Baseline is the median of the first three probes.
- One column per weekly probe; write the score out of 8, not a percent.
- Trend: up, flat or down over the last four probes.
- Decision: keep going, change the teaching, or raise the target.
- Leave a cell blank rather than guess; a gap is more honest than a filled-in score.

What it is for

Grouping. 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.

PREVIEW

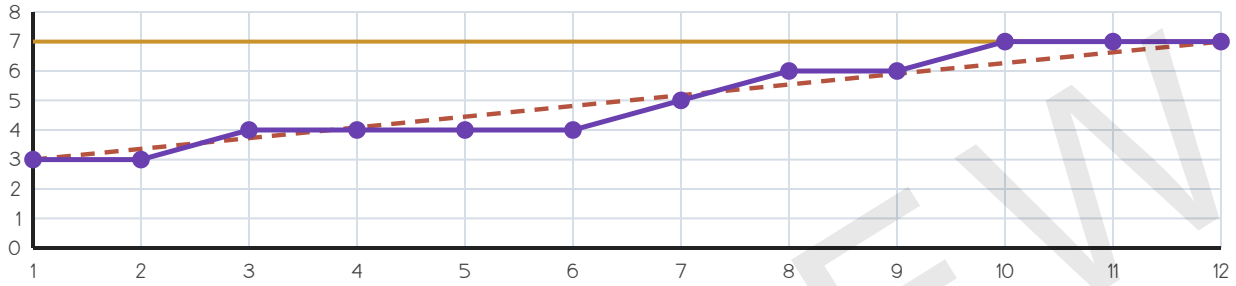
A Filled-In Data Log (Invented Student)

Devon is invented. Twelve weekly probes, the aim line, the change three low points forced, and the criterion being met.

The goal, as written for Devon, ninth grade (invented)

By November 20, when given 8 exponential functions problems (tables, equations and graphs), Devon will answer 7 of 8 problems correctly on 3 consecutive weekly probes, as measured by teacher-scored exponential functions probes (forms A–D).

Devon's graph (invented): dots are the weekly scores, dashed is the aim line, gold is the criterion of 7



#	Date	Form	Correct	Errors	Graphed	Notes
1	9/8	A	3	5	3	baseline
2	9/9	B	3	5	3	baseline
3	9/10	C	4	4	4	baseline (median of 3, 3, 4 = 3)
4	9/17	D	4	4	4	b read as the amount added
5	9/24	A	4	4	4	same: added, never multiplied
6	10/1	B	4	4	4	3 under the aim line: ratio row on every table
7	10/8	C	5	3	5	uses the ratio row on tables
8	10/15	D	6	2	6	evaluate: power first, then a
9	10/22	A	6	2	6	graphs: read y, not x
10	10/29	B	7	1	7	criterion score, first time
11	11/5	C	7	1	7	second in a row at 7
12	11/12	D	7	1	7	third in a row: goal met

How to read the log

- Baseline was the median of three forms on three days: 3, 3, 4, so 3. Not the average, not the best.
- The aim line runs from 3 at probe 1 to 7 at probe 12. Probes 4, 5 and 6 (4, 4, 4) sat under it: three in a row, so the teaching changed and the change is written on the row.
- The notes name what the misses looked like: b was read as an amount to add, not a number to multiply by. A score alone would not have said that.
- Criterion was met on probes 10, 11 and 12 (7, 7, 7): three in a row at 7 of 8 or better.

The progress report sentence this log produces

On weekly exponential functions probes (8 problems, untimed), Devon scored 3 of 8 at baseline and 7, 7 and 7 of 8 on the last three probes, meeting the criterion of 7 of 8 on 3 consecutive probes.

PREVIEW