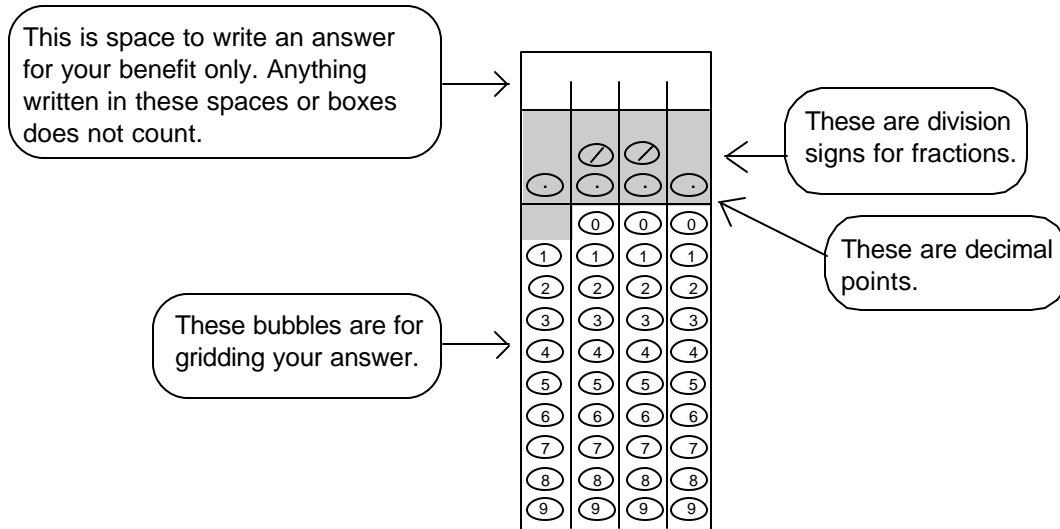# Gridding Answers

1. Pages 551-554 contain an introduction to the grid and the main things to know about gridding.
2. Pages 555-557 contain nine practice problems.
3. Pages 558-560 contain detailed answers to the nine practice problems.

On all PSAT and SAT exams, students will have to record the answers to about ten questions on a grid similar to the one below. At first, this gridding may be a difficult and daunting exercise. Students should definitely have some gridding practice prior to taking the test. The following grid is like the one that will be used.

This is space to write an answer for your benefit only. Anything written in these spaces or boxes does not count.

These are division signs for fractions.

These are decimal points.

These bubbles are for gridding your answer.

The following are the main things to know about gridding.
1. Credit will be given only if the ovals are filled in correctly. While blank boxes are provided to write the answer, anything written in these spaces or boxes will not count.
2. Correct answers must be between 0 and 9999. It is not possible to grid a negative number or a radical, so these cannot be correct answers.
3. Answers can start in any column. For example, 21 may be gridded in the following three ways.
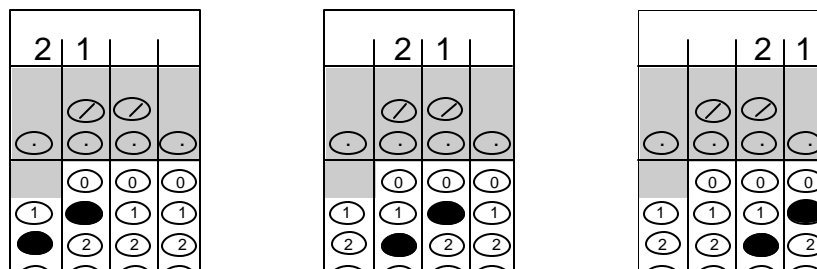
4. An answer cannot be gridded as a mixed fraction. The following fractions are examples of mixed fractions: $1\frac{2}{5}$, $14\frac{3}{5}$, $30\frac{1}{2}$.

A mixed fraction must be gridded as an improper fraction or as a decimal. $1\frac{2}{5}$ must be gridded as the improper fraction $\frac{7}{5}$ or as the decimal 1.4.

The following four grids show how $\frac{7}{5}$ may be gridded.

5. The rule for gridding a decimal is to enter the most accurate value that the grid will accommodate. A repeating decimal such as $0.333\overline{3}$, if answered as a decimal instead of the fraction 1/3, must be gridded as the left grid below. The other four grids are <u>incorrect</u> for $0.333\overline{3}$.

Correct	Incorrect	Incorrect	Incorrect	Incorrect

Of course, another correct grid is of the equivalent fraction $\frac{1}{3}$.

6. More on decimal gridding. Again, the rule for gridding a decimal is to enter the most accurate value that the grid will accommodate.
A feature of this gridding system is that a repeating decimal such as .6666̄ may be gridded as .666 or .667. Both will be counted as correct. Another acceptable answer is the equivalent fraction 2/3. However, values considered less accurate, such as .6, .66, .7 and .67, are not acceptable.
<u>A repeating decimal must fill one oval in each of the four columns or it is incorrect.</u>

The following are the correct ways to grid .6666̄.

7. Be aware that some questions can have a variety of different <u>correct</u> answers.

> Example: What is one possible value of x for which 1/3 < x < 1/2?

There are many correct answers to this question. Unless the question instructs otherwise, a correct answer may be expressed as a decimal or as a fraction. Examples are .34, .4, .45, 2/5, 3/7 and 4/9.

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The following is a quiz to test your comprehension of gridding. The answers are at the bottom of the next page.

1. Which of the following grids is incorrect for the answer $1\frac{1}{2}$?

(A) (B) (C) (D)

2. Which of the following grids is <u>incorrect</u> for the answer 8/9?

(A) (B) (C) (D)

3. Which of the following grids is <u>incorrect</u> for the answer 1.25?

(A) (B) (C) (D)

Answers to 1-3

1. Choice (C) is the incorrect grid. You cannot grid a fraction as a mixed number. For this gridding system, choice (C) gives the number 11/2.

2. Choice (C) is the incorrect grid. The rule for gridding a decimal is to enter the most accurate value that the grid will accommodate. A repeating decimal such as .8888̄ cannot be entered as .8. It must be entered as .888 or .889.

3. Choice (D) is the incorrect grid. If the grid will accommodate the whole answer, as it will for 1.25, a rounded-off version such as 1.3 will be incorrect.

9 Practice Problems
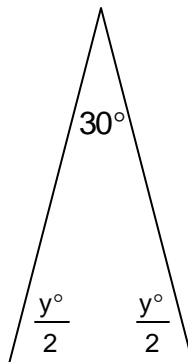## Requiring Gridding of Student Produced Answers

1. If $\frac{1}{4}$ (x)(12y) = 2, what is the value of xy?

2. The total annual subscription cost of a monthly magazine is $7.80. The total cost of a single issue of the magazine at a newsstand is $1.05. How much money in dollars is saved in one year by subscribing to the magazine rather than purchasing the magazine each month at a newsstand? Disregard the $ sign when gridding your answer.

3. In the triangle below, what is the value of y?

$30°$

$\frac{y°}{2}$ $\frac{y°}{2}$

4. If $3^n = 27$, what is the value of 2^{n+1}?

_ _

5. If $\dfrac{3}{x} = \dfrac{18}{7}$, what is the value of x?

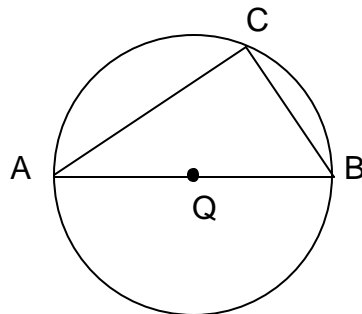_ _

6. Nine consecutive <u>odd</u> integers are listed in increasing order. If the sum of the first three is 3, what is the sum of the last three?

7. If $(x + y)^2 = 100$ and $xy = 24$, what is $x^2 + y^2$?

8. $\overline{AB}$ is a diameter of circle Q. AC = 8 and CB = 6. S and T are points (not shown) on the circle and segment ST does not pass through Q, the center of the circle. What is the greatest possible value of ST that the grid will accommodate?

9. Grid one integer that is both greater than $\sqrt{257}$ and less than $\sqrt{350}$.

Answers to the 9 Practice Problems

1. If $\frac{1}{4}$ (x)(12y) = 2, what is the value of xy?

$3xy = 2$

$xy = \frac{2}{3}$

This answer may be gridded in the following ways.

2	/	3	

2	/	3	

.	6	6	6

.	6	6	7

2. The total annual subscription cost of a monthly magazine is \$7.80. The total cost of a single issue of the magazine at a newsstand is \$1.05. How much money in dollars is saved in one year by subscribing to the magazine rather than purchasing the magazine each month at a newsstand? Disregard the \$ sign when gridding your answer.
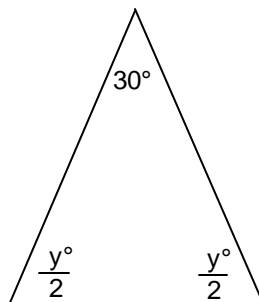
At \$1.05 a month, 12 issues will cost \$12.60.
This is \$4.80 (\$12.60 - \$7.80) less than the yearly subscription rate.

\$4.80 may be gridded as 4.80, 4.8 or 24/5.

4	.	8	0

2	4	/	5

3. In the triangle below, what is the value of y?

30°

$\frac{y°}{2}$ $\frac{y°}{2}$

$30 + y/2 + y/2 = 180$
$30 + y = 180$
$y = 150$

These are the two ways to grid 150.

1	5	0	

1	5	0	

4. If $3^n = 27$, what is the value of 2^{n+1}?

$n = 3$ since $3^3 = 27$

$2^{3+1} = 2^4 = (2)(2)(2)(2) = 16$

These are the 3 ways to grid 16.

5. If $\dfrac{3}{x} = \dfrac{18}{7}$, what is the value of x?

Cross multiply to get
$18x = 21$

$x = \dfrac{21}{18}$

$x = \dfrac{7}{6}$

This answer may be gridded as 7/6, 1.16 or 1.17.

6. Nine consecutive odd integers are listed in increasing order. If the sum of the first three is 3, what is the sum of the last three?

The first three of the nine consecutive odd integers must be -1, 1, and 3 because the sum of these three integers is 3.
Therefore the nine odd integers are -1, 1, 3, 5, 7, 9, 11, 13 and 15. The sum of the last three of these (11 + 13 + 15) is 39.

These are the three ways to grid 39.

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7. If $(x + y)^2 = 100$ and $xy = 24$, what is $x^2 + y^2$?

$(x + y)^2 = x^2 + 2xy + y^2$

since $(x + y)^2 = 100$
$x^2 + 2xy + y^2 = 100$

since $xy = 24$
you can substitute and say

$x^2 + 2(24) + y^2 = 100$

$x^2 + 48 + y^2 = 100$

subtract 48 from both sides to get

$x^2 + y^2 = 52$

In a similar manner to the gridding in #6, 52 may be gridded in three ways. To the right is one of the ways.

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8. $\overline{AB}$ is a diameter of circle Q. AC = 8 and CB = 6.
S and T are points (not shown) on the circle and
segment ST does not pass through Q, the center of the
circle. What is the greatest possible value of ST that
the grid will accommodate?
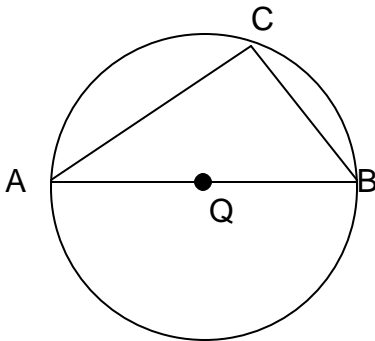
Because ∠C is inscribed in a semicircle, it has a measure of 90°. This means that triangle ACB is a right triangle and that you can find AB by using the Pythagorean theorem. You will get AB = 10. $\overline{ST}$ can have a length of any positive number less than 10. $\overline{ST}$ cannot equal 10 since $\overline{ST}$ does not pass through Q and therefore, cannot be a diameter. The greatest possible value of ST that the grid will accommodate is 9.99.

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9. Grid one integer that is both greater than $\sqrt{257}$
and less than $\sqrt{350}$.

$\sqrt{256}$ = 16

$\sqrt{289}$ = 17

$\sqrt{324}$ = 18

$\sqrt{361}$ = 19

There are two possible answers, 17 and 18.

Each may be gridded in three ways as was shown in #6. The grid to the right shows one example of how to grid 17.

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