Estimating Products

When you are working with fractions and mixed numbers, you can estimate using rounding, compatible numbers, or compatible benchmark fractions.

Estimate $\frac{3}{10} \times 21$ using a whole number that is compatible with the denominator.

$\frac{3}{10} \times 21$ Change 21 to the nearest whole number that is compatible with 10.

↓   ↓

$\frac{3}{10} \times 20 = 6$

$\frac{3}{10} \times 21 \approx 6$ Think: $20 \div 10 = 2$.

$3 \times 2 = 6$.

Estimate $\frac{3}{10} \times 12$ using a compatible benchmark fraction.

$\frac{3}{10} \times 12$ Round $\frac{3}{10}$ to a compatible benchmark fraction. Since $\frac{3}{10}$ is close to $\frac{1}{4}$ and 4 is a factor

↓   ↓

$\frac{1}{4} \times 12 = 3$ of twelve, use $\frac{1}{4}$.

$\frac{3}{10} \times 12 \approx 3$ Think: $12 \div 4 = 3$.

$1 \times 3 = 3$.

Estimate each product by using compatible numbers or benchmark fractions.

1. $\frac{1}{5} \times 20 =$ _____   **2.** $\frac{4}{7} \times 12 =$ _____   **3.** $\frac{5}{8} \times 20 =$ _____

4. $31 \times \frac{3}{5} =$ _____   **5.** $\frac{7}{12} \times 27 =$ _____   **6.** $\frac{9}{16} \times 70 =$ _____

7. $31 \times \frac{2}{7} =$ _____   **8.** $24 \times \frac{5}{12} =$ _____   **9.** $12 \times \frac{4}{9} =$ _____

Estimate each product by rounding each factor to the nearest whole number.

10. $10\frac{2}{3} \times 3\frac{1}{8} \rightarrow$ Round $10\frac{2}{3}$: _____   Round $3\frac{1}{8}$: _____   Multiply: _____

11. $9\frac{2}{9} \times 3\frac{5}{6} =$ _____   **12.** $5\frac{7}{8} \times 6\frac{3}{4} =$ _____   **13.** $2\frac{1}{5} \times 6\frac{4}{10} =$ _____

14. Josh used $\frac{3}{7} \times 21$ as a compatible number estimate for $\frac{3}{7} \times 20$. Is his estimate reasonable? Why or why not?

_____

_____

15. Which estimate for $\frac{7}{12} \times 20$ is better than the other?

$\frac{7}{12} \times 20 \approx \frac{7}{12} \times 24 = 14$ $\frac{7}{12} \times 20 \approx \frac{1}{2} \times 20 = 10$.

_____

_____

_____

_____

Estimating Products

Estimate each product.

1. $2\frac{3}{8} \times \frac{1}{3}$ _____   **2.** $6 \times 2\frac{1}{5}$ _____   **3.** $\frac{6}{10} \times 5\frac{3}{4}$ _____

4. $3\frac{7}{9} \times 6\frac{2}{5}$ _____   **5.** $2\frac{1}{2} \times 2\frac{1}{3}$ _____   **6.** $\frac{7}{8} \times 4\frac{3}{8}$ _____

7. $27 \times \frac{3}{8}$ _____   **8.** $\frac{1}{4} \times 17$ _____   **9.** $\frac{3}{5} \times 51$ _____

10. $8\frac{4}{9} \times 3\frac{6}{7}$ _____   **11.** $\frac{12}{15} \times 8$ _____   **12.** $17 \times \frac{1}{2}$ _____

13. $\frac{1}{3} \times 2\frac{4}{10}$ _____   **14.** $7\frac{5}{8} \times 2\frac{2}{3}$ _____   **15.** $\frac{5}{12} \times 12$ _____

16. Show three ways to estimate $\frac{3}{5} \times 9\frac{1}{2}$. Identify each method you use.

_____

_____

17. Jenna lives $4\frac{3}{10}$ miles from school. She estimates that she travels
$4 \times 2 \times 5$, or 40 miles each week. Is her estimate an overestimate
or an underestimate? Explain.

_____

_____

18. Which benchmark fraction could you use to estimate the product of $36 \times \frac{11}{16}$? _____

19. Estimation Which is the best estimate for the area of a square with sides
equal to $4\frac{1}{8}$ inches?

A 6 sq in.
B 12 sq in.
C 16 sq in.
D 20 sq in.

$4\frac{1}{8}$ in.
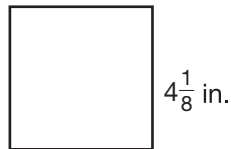
20. Bryce has 24 baseball trophies. Matt has $\frac{3}{4}$ as many trophies as Bryce.
How many trophies does Matt have?

A 6 trophies
B 12 trophies
C 18 trophies
D 24 trophies