

The divide by 5 strategy. Stg E6/6 \times/\div

Name: _____

The best way to get a handle on your ordinary 'divide-by-fives' is to use the basic facts you already know. All you do is turn it around a bit. E.g $10 \div 5 = ?$ Just swap it in your head so it looks like this $5 \times ? = 10$... Aha, easy, the missing number is **2**, because you already know that $5 \times 2 = 10$, so $10 \div 5 = 2$. We just use our 'family of facts'. Let's practice the easy ones:

1. $5 \times 5 = 25$ so $25 \div 5 = \underline{\quad}$
2. $5 \times \underline{\quad} = 60$ so $60 \div 5 = \underline{\quad}$
3. $5 \times \underline{\quad} = 35$ so $35 \div 5 = \underline{\quad}$
4. $5 \times \underline{\quad} = 50$ so $50 \div 5 = \underline{\quad}$
5. $5 \times \underline{\quad} = 15$ so $15 \div 5 = \underline{\quad}$
6. $5 \times \underline{\quad} = 20$ so $20 \div 5 = \underline{\quad}$
7. $5 \times \underline{\quad} = 45$ so $45 \div 5 = \underline{\quad}$
8. $5 \times \underline{\quad} = 30$ so $30 \div 5 = \underline{\quad}$
9. $5 \times \underline{\quad} = 55$ so $55 \div 5 = \underline{\quad}$
10. $5 \times \underline{\quad} = 40$ so $40 \div 5 = \underline{\quad}$

You can use a similar trick with numbers 10 x bigger too, just use place value to help:

E.g $350 \div 5 = ??$ $5 \times 7 = 35$, $5 \times 70 = 350$ Try it:

- a) $5 \times \underline{\quad} = 200$ so $200 \div 5 = \underline{\quad}$
- b) $5 \times \underline{\quad} = 550$ so $550 \div 5 = \underline{\quad}$
- c) $5 \times \underline{\quad} = 400$ so $400 \div 5 = \underline{\quad}$
- d) $5 \times \underline{\quad} = 250$ so $250 \div 5 = \underline{\quad}$
- e) $5 \times \underline{\quad} = 150$ so $150 \div 5 = \underline{\quad}$

But, I hear you say, *what about big nasty ones. Divide-by-fives that hide under your bed at night type ones?* Fear not wunderkind, because there is a solution to these as well. This one is kind of cool. All you have to do is double it and then divide by 10. *What?* Well say I've got a question like $245 \div 5 = ??$ Double 245 first so **490**, then use place value to divide by 10, so we get **49**. Then we can say $245 \div 5 = 49$! This works because $5 = 10 \div 2$. P.S. if you prefer, you can divide by 10 first, then double – it works either way! Your turn:

1. $235 \div 5 = ??$ First: $235 \times 2 = 470$. Then $470 \div 10 = 47$ so $235 \div 5 = \underline{\quad}$
2. $310 \div 5 = ??$ First: $310 \times 2 = \underline{\quad}$. Then $620 \div 10 = \underline{\quad}$ so $310 \div 5 = \underline{\quad}$
3. $255 \div 5 = ??$ First: $255 \times 2 = 510$. Then $\underline{\quad} \div 10 = \underline{\quad}$ so $255 \div 5 = \underline{\quad}$
4. $345 \div 5 = ??$ First: $345 \times 2 = \underline{\quad}$. Then $\underline{\quad} \div 10 = 69$ so $345 \div 5 = \underline{\quad}$
5. $420 \div 5 = ??$ First: $420 \times 2 = \underline{\quad}$. Then $\underline{\quad} \div 10 = \underline{\quad}$ so $420 \div 5 = \underline{\quad}$
6. $350 \div 5 = ??$ First: $350 \times 2 = \underline{\quad}$. Then $\underline{\quad} \div 10 = \underline{\quad}$ so $350 \div 5 = \underline{\quad}$
7. $515 \div 5 = ??$ First: $515 \times 2 = \underline{\quad}$. Then $\underline{\quad} \div 10 = \underline{\quad}$ so $515 \div 5 = \underline{\quad}$
8. $225 \div 5 = ??$ First: $225 \times 2 = \underline{\quad}$. Then $\underline{\quad} \div 10 = \underline{\quad}$ so $225 \div 5 = \underline{\quad}$
9. $165 \div 5 = ??$ First: $165 \times 2 = \underline{\quad}$. Then $\underline{\quad} \div 10 = \underline{\quad}$ so $165 \div 5 = \underline{\quad}$
10. $475 \div 5 = ??$ First: $475 \times 2 = \underline{\quad}$. Then $\underline{\quad} \div 10 = \underline{\quad}$ so $475 \div 5 = \underline{\quad}$

Maths vocabulary: The numbers each have special names! Like Jerome and Francis

dividend		divisor		quotient
35	\div	5	=	7

The divide by 5 strategy. Stg 6/E7 \times/\div

Name: _____

You guessed it, now it's time to get serious. *Is there a sneaky way to divide big tricky numbers by 5 using a multiplication algorithm?* You betcha there is! If we figure that dividing by 5 is the same as looking for $1/5$ of that number, and we think of $1/5$ as 0.2 (the decimal version) all we have to do is use place value to multiply the number by 0.2

In this we know that $d \div 5 = d \times 0.2$ The good news is that multiplying by 0.2 is easy, because it's like doubling, only 10 times less! Look: $6 \times 2 = 12$, $6 \times 0.2 = 1.2$

E.g. What is $2354 \div 5$?? (or 2354×0.2)

<p>E.g. 2354</p> $\begin{array}{r} X \\ \hline 0.2 \times 4 = 0.8 \\ 0.2 \times 50 = 10 \\ 0.2 \times 300 = 60 \\ 0.2 \times 2000 = 400 \\ \hline \text{(Adds to)} = 470.8 \end{array}$ <p>So $2354 \div 5 = 470.8!$</p>	<p>a. $4768 \div 5 = ??$</p> $\begin{array}{r} \\ \hline X \\ \hline 0.2 \times 8 = 1.6 \\ 0.2 \times 60 = 12 \\ 0.2 \times 700 = 140 \\ 0.2 \times 4000 = 800 \\ \hline = \end{array}$	<p>b. $8355 \div 5 = ??$</p> $\begin{array}{r} \\ \hline X \\ \hline 0.2 \times 5 = 1.0 \\ 0.2 \times 50 = 10 \\ 0.2 \times 300 = 60 \\ 0.2 \times 8000 = 1600 \\ \hline = \end{array}$
<p>c. $5780 \div 5 = ???$</p> $\begin{array}{r} \\ \hline X \\ \hline 0.2 \times 80 = \\ 0.2 \times 700 = \\ 0.2 \times 5000 = \\ \hline = \end{array}$	<p>d. $5274 \div 5 = ???$</p> $\begin{array}{r} \\ \hline X \\ \hline 0.2 \times 4 = \\ 0.2 \times 70 = \\ 0.2 \times 200 = \\ 0.2 \times 5000 = \\ \hline = \end{array}$	<p>e. $6575 \div 5 = ???$</p> $\begin{array}{r} \\ \hline X \\ \hline 0.2 \times 5 = \\ 0.2 \times 70 = \\ 0.2 \times 500 = \\ 0.2 \times 6000 = \\ \hline = \end{array}$

Ok, you're ready to go freestyle! Use the squares in your maths books to work things out – you'll probably figure out some shortcuts on the way!

f. $7432 \div 5$

g. $46735 \div 5$

h. $89435 \div 5$

i. $6864 \times \div 5$

The divide by 5 strategy. Stg 6/E7 x/÷

ANSWERS - don't print!

You guessed it, now it's time to get serious. *Is there a sneaky way to divide big tricky numbers by 5 using a multiplication algorithm?* You betcha there is! If we figure that dividing by 5 is the same as looking for $1/5$ of that number, and we think of $1/5$ as 0.2 (the decimal version) all we have to do is use place value to multiply the number by 0.2

In this we know that $q \div 5 = q \times 0.2$ The good news is that multiplying by 0.2 is easy, because it's like doubling, only 10 times less! Look: $6 \times 2 = 12$, $6 \times 0.2 = 1.2$

E.g. What is $2354 \div 5$?? (or 2354×0.2)

<p>E.g. 2354</p> $\begin{array}{r} X \\ \hline 0.2 \times 4 = 0.8 \\ 0.2 \times 50 = 10 \\ 0.2 \times 300 = 60 \\ 0.2 \times 2000 = 400 \\ \hline \text{(Adds to)} = 470.8 \end{array}$ <p>So $2354 \div 5 = 470.8!$</p>	<p>a. $4768 \div 5 = ??$</p> $\begin{array}{r} X \\ \hline 0.2 \times 8 = 1.6 \\ 0.2 \times 60 = 12 \\ 0.2 \times 700 = 140 \\ 0.2 \times 4000 = 800 \\ \hline = 953.6 \end{array}$	<p>b. $8355 \div 5 = ??$</p> $\begin{array}{r} X \\ \hline 0.2 \times 5 = 1.0 \\ 0.2 \times 50 = 10 \\ 0.2 \times 300 = 60 \\ 0.2 \times 8000 = 1600 \\ \hline = 1671 \end{array}$
<p>c. $5780 \div 5 = ???$</p> $\begin{array}{r} X \\ \hline 0.2 \times 80 = 16 \\ 0.2 \times 700 = 140 \\ 0.2 \times 5000 = 1000 \\ \hline = 1156 \end{array}$	<p>d. $5274 \div 5 = ???$</p> $\begin{array}{r} X \\ \hline 0.2 \times 4 = 0.8 \\ 0.2 \times 70 = 14 \\ 0.2 \times 200 = 40 \\ 0.2 \times 5000 = 1000 \\ \hline = 1054.8 \end{array}$	<p>e. $6575 \div 5 = ???$</p> $\begin{array}{r} X \\ \hline 0.2 \times 5 = 1.0 \\ 0.2 \times 70 = 14 \\ 0.2 \times 500 = 100 \\ 0.2 \times 6000 = 1200 \\ \hline = 1315 \end{array}$

Ok, you're ready to go freestyle! Use the squares in your maths books to work things out – you'll probably figure out some shortcuts on the way!

f. $7432 \div 5 = 1486.4$ g. $46735 \div 5 = 9347$ h. $89435 \div 5 = 17887$

i. $6864 \div 5 = 1372.8$

What do you get if you cross a maths teacher and a clock? Arithma-ticks! (Groan)