

Higher Check In - 2.04 Ordering fractions, decimals and percentages

1. Put these calculations in order of size, starting with the smallest.

$$\frac{0.8^2}{0.5} \quad 75\% \text{ of } 2\frac{1}{2} \quad 1\frac{2}{5} \times \frac{7}{8}$$

2. Put the correct symbol, <, > or = between the following fractions.

$$\frac{4}{15} \quad \square \quad \frac{9}{35}$$

3. Write a whole number in the box to make the statement correct.

$$\frac{4}{5} - \frac{1}{\square} > \frac{3}{4}$$

4. Fill in the missing number in the sequence.

$$\frac{1}{8}, \frac{1}{6}, \dots, \frac{1}{4}$$

5. Given that $1.25 \leq a < 1.35$ and $0.85 \leq b < 0.95$

- (a) write $a + b$ as an equality,
(b) write $a - b$ as an equality.

6. Selina's maths class has 4 left-handed people out of a total of 21 students. Her science class has 5 left-handed people out of 30 students. Selina says that there is a greater chance of selecting a left-handed person from her science class than her maths class. Explain why Selina is wrong.
7. The population of Middleton increased from 24 650 to 25 010, while the population of Seaford increased by 12 in every 1000 people in the same time period. Show that Middleton had the greatest percentage increase in population.
8. In an archery club $\frac{3}{5}$ of the members are senior members and the others are junior members. 40% of the members are right-handed seniors and 30% of the members are right-handed juniors. Show that the proportion of seniors who are right-handed compared to the proportion of juniors who are right-handed can be written as $\frac{2}{3} < \frac{3}{4}$.
9. In a class of n students, 19 play football, 13 play rugby and every student plays at least one of these sports. Use this information to express the number of students in the class as an inequality.

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10. Alex, Beth and Charlie rent a house with three students. Alex pays 15% of the rent. Beth's rent is $\frac{4}{3}$ of Alex's. Charlie's rent is 80% of Beth's. The three students split the remaining rent equally and pay £147 each. Write down the rent payments in order from smallest to largest.

Extension

ABC is a right-angled triangle.

- AB's length is 4.5 m.
- BC's length is $\frac{5}{3}$ of AB's length.
- CA's length is 80% of BC's length.

Calculate the area of ABC.

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Answers

1. $1\frac{2}{5} \times \frac{7}{8} = 1\frac{9}{40} = 1.225$ $\frac{0.8^2}{0.5} = 1.28$ 75% of $2\frac{1}{2} = 1.875$
2. $\frac{4}{15} > \frac{9}{35}$ $\left[\frac{28}{105} > \frac{27}{105} \text{ or } 0.2\overline{6} > 0.2571428\overline{8} \right]$
3. Any number bigger than 20
4. $\left[\frac{3}{24} \right], \left[\frac{4}{24} \right], \frac{5}{24}, \left[\frac{6}{24} \right]$
5. (a) $2.1 \leq a + b < 2.3$
(b) $0.3 \leq a - b < 0.5$
6. $\frac{4}{21} = 19\%$ while $\frac{5}{30} = 17\%$ so there is a higher probability of selecting a left-handed student from the maths class. Alternatively, $\frac{4}{21} = \frac{40}{210}$ is bigger than $\frac{5}{30} = \frac{35}{210}$.
7. Middleton: percentage increase was $\frac{25010 - 24650}{24650} \times 100 \approx 1.5\%$
Seaford: percentage increase was $\frac{12}{1000} = 1.2\%$
So Middleton had the largest percentage increase in population
- 8.
- | | Seniors | Juniors | Total |
|--------------|---------------------------|---------------------------|-------|
| Right-handed | 40% of 100 = 40 | 30% of 100 = 30 | 70 |
| Left-handed | 60 – 40 = 20 | 40 – 30 = 10 | 30 |
| Total | $\frac{3}{5}$ of 100 = 60 | $\frac{2}{5}$ of 100 = 40 | 100 |
- Proportion of seniors who are right-handed = $\frac{40}{60} = \frac{2}{3}$
Proportion of females who are right-handed = $\frac{30}{40} = \frac{3}{4}$
So $\frac{2}{3} < \frac{3}{4}$
[This can also be solved using a tree diagram]
9. Minimum n assumes all rugby players play football therefore $n \geq 19$, maximum n assumes no student plays both therefore $n \leq 32$ so $19 \leq n \leq 32$.
10. £135 (Alex), £144 (Charlie), £147 each (the three students), £180 (Beth).

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Extension

Side BC = 7.5 m. Side CA = 6 m. Side BC is the longest side (the hypotenuse), so ABC's base and height are 4.5 m and 6 m. ABC's area = 13.5 m^2 .

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AO1	5	Use inequalities in calculations			
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AO2	7	Compare percentage and fractional increase			
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